The LADIES' Diary:
OR
WOMAN'S ALMANACK,

For the Year of our LORD 1788;

Being the BISSEXTILE, or LEAP-YEAR.

Containing New Improvements in ARTS and SCIENCES,
And many Entertaining PARTICULARS:
Designed for the *Use* and *Diversion* of the

FAIR-SEX.

The Eighty-fifth ALMANACK Published of this Kind.

VIRTUE and SENSE, with FEMALE-SOFTNESS join'd,
(ALL that subdues and captivates Mankind!)
In BRITAIN's Matchless FAIR resplendent shine;
THEY rule LOVE's Empire by a Right Divine:
Justly their Charms the astonish'd World admires,
Whom *Royal* CHARLOTTE's bright Example fires.

Y. of Chrift.		Ys. fince.	Y. of Chrift.		Ys. finci.
1600	King Charles I. born	188	1714	Q. Ann died, K. Geo. I. fucc.	74
1603	Q. Eliz. died, K. Ja. fucc.	185	1715	Rebellion in the north -	73
1603	A great Plague in London	185	1716	A very great froft -	72
1605	Popifh Gun-powder Plot	183	1726	Sir Haac Newton died -	62
1616	Shakfpeare the poet died	172	1727	K. Geo. I. died, Geo. II fucc.	61
1625	K. James died, Cha. I. fucc.	163	1739	War againft Spain declared	49
1641	Bloody Irifh maffacre -	147	1739	A very great froft -	49
1642	Sir I. Newton born, Dec. 25	146	1743	A great comet appeared	45
1649	K. Charles I. beheaded	139	1744	War againft France declared	44
1658	Oliver Cromwell died -	130	1745	Rebellion in Scotland -	43
1660	K. Charles II. reftored	128	1748	A general peace -	40
1662	Royal Society inftituted	126	1750	Weftminfter bridge finifhed	38
1665	Died of the plague 68,586	123	1752	Date and Calendar altered	36
1666	Great fire in London -	122	1756	War againft France declared	32
1666	War againft Denmark decl.	122	1760	K. Geo. II. died, G. III. fucc.	28
1667	Peace with Hol. Fr. & Den.	121	1762	American philof. foc. inftit.	26
1672	War againft Holland decl.	116	1762	War againft Spain declared	26
1672	Halfpence & Farth. coined	116	1763	Peace with France & Spain	25
1674	Peace with Holland procl.	114	1765	Otaheite difcovered -	23
1679	Habeas Corpus act paffed	109	1770	Blackfriars bridge finifhed	18
1685	K. Cha. II. died, Ja. II. fucc.	103	1772	A revolution in Denmark	16
1688	Prince of Orange landed	100	1772	A revolution in Sweden	16
1688	K. James II. abdicated	100	1775	War againft America begun	13
1689	Wm. and Mary crowned	99	1776	America declared independent	12
1693	Hackney coaches eftablifhed	95	1778	French treaty with America	10
1702	K. Wm. died, Q. Ann fucc.	86	1778	War againft France begun	10
1702	War againft France declared	86	1779	War againft Spain begun	9
1707	England & Scotland united	81	1780	War againft Holland begun	8
1713	Peace with France procl.	75	1783	A general peace -	5

BIRTH-DAYS, [N.S.] and YEARS, of the ROYAL FAMILY of GREAT BRITAIN.

KING GEORGE III. June 4, 1738	Prince Aug. Fred. Jan. 27, 1773
Prince of Wales, Auguft 12, 1762	Prince Adolph. Fred. Feb. 24, 1774
Prince Frederick, Auguft 16, 1763	Princefs Mary, April 25, - 1776
Prince William Henry, Aug. 21, 1765	Princefs Sophia, Nov. 3, - 1777
Prs. Charl. Aug. Mat. Sept. 29, 1766	Princefs Amelia, Aug. 7, - 1783
Prince Edward, Nov. 2, - 1767	Queen Charlotte, May 19, - 1744
Prs. Augufta Sophia, Nov. 8, 1768	Prs. Augufta of Brunfw Aug. 11, 1737
Prs. Elizabeth, May 22, - 1770	Duke of Gloucefter, Nov. 25, 1743
Prince Erneft Auguftus, June 5, 1771	Duke of Cumberland, Nov. 7, 1745

YEARS of BIRTHS of the Principal SOVEREIGN PRINCES of EUROPE.

Achmet IV. Grand Seignor 1715	Jofeph Ben. Aug. Emp. Germ. 1741
Charles, King of Spain, - 1716	Fred. William, King of Pruffia, 1744
Pius VI. Pope - - 1717	Guftavus, King of Sweden, 1746
Victor Amada Maria, K Sardinia 1726	William V. Stadtholder, - 1748
Catherine, Emprefs of Ruffia, 1729	Chriftian VII. K. of Denmark, 1749
Staniflaus Aug. King of Poland 1732	Ferdinand IV. King of Sicily, 1751
Maria, Queen of Portugal - 1734	Lewis XVI. King of France 1754

New Moon,	8th, 54m. paſt 11 morn.	
Firſt Quarter, 16th, 57m. paſt 9 morn.		Sun enters ♒
Full Moon 23d, 59m. paſt 1 morn.		19d. 18h. 48m.
Laſt Quarter, 30 h, 15m. paſt 1 morn.		

1	Tu	Circumciſion	8	5	3	55	23 s 1	1 m 19	24
2	W			4		56	22 56	2 30	25
3	Th			4		56	50	3 39	26
4	F			3		57	44	4 42	27
5	S	*Old Chriſtmas Day*		2		58	38	5 40	28
6	F	Epiphany *Twelfth-day*		1		59	31	6 32	29
7	M	*Plow Monday*		0	4	0	23	7 15	30
8	Tu	*Lucian*		0		0	15	☽ ſets	N
9	W		7	59		1	7	5 a 23	2
10	Th			58		2	21 58	6 30	3
11	F			57		3	49	7 39	4
12	S	*Old New-Year's Day*		56		4	39	8 47	5
13	F	1 S.a.Ep. *Hil.* Ca. T. be.		54		6	29	9 57	6
14	M	☉ rſ. Term begins		53		7	19	11 8	7
15	Tu			52		8	8	morn	8
16	W			51		9	20 57	0 22	9
17	Th	*Old Twelfth Day*		50		10	45	1 39	10
18	F	Queen's B. day kept. *Priſca*		48		12	33	2 54	11
19	S			47		13	20	4 10	12
20	F	Septuag. Sun. *Fabian.*		46		14	8	5 16	13
21	M	*Agnes* Hilary, 1 ret.		44		16	19 54	6 11	14
22	Tu	*Vincent*		43		17	41	6 53	15
23	W	Hilary Term begins		41		19	27	☽ riſes	F
24	Th			40		20	13	6 a 50	17
25	F	Converſion of St. Paul		38		22	18 58	8 13	18
26	S			37		23	43	9 34	19
27	F	Sexag. Sun. Pr.Aug. F. b.		35		25	28	10 50	20
28	M	Hilary, 2 return		34		26	12	morn	21
29	Tu			32		28	17 56	0 5	22
30	W	K. Cha. I. mart. 1649		31		29	40	1 16	23
31	Th			29		31	23	2 25	24

Days	L. of D.	Day Inc.	D.breaks	Tw. ends	Sun Enl	Cl. bef. S.	7 Stars So.
1	7 50	0 6	6 0	6 0	4 41	4 1″	8 a 45
6	58	14	5 58	2	43	6 18	23
11	8 6	22	54	6	46	8 23	1
16	18	34	49	11	49	10 13	7 40
21	32	48	44	16	53	11 47	19
26	46	1 2	38	22	58	13 1	6 57

New Moon, 7th, 5 m. paſt 6 morn.	
Firſt Quarter, 14th, 56m. paſt 8 night.	Sun enters ♓
Full Moon, 21ſt, 49m. paſt 12 noon.	18d. 9h. 38m.
Laſt Quarter, 28th, 16m. paſt 8 night.	

M D	W D	Sundays, Holydays, &c.	Sun rises	Sun ſets	Sun's decl.	D rises & ſets	D 's Age
1	F		7 27	4 33	17 s 6	3 m 27	25
2	S	Purif. or Candlemas-day	25	35	16 49	4 21	26
3	F	Quinq. or Shrove S. *Blaſe*	24	36	31	5 6	27
4	M	Hilary, 3 return	22	38	13	5 42	28
5	Tu	Shrove Tueſday. *Agatha*	20	40	15 55	6 13	29
6	W	Aſh Wedneſday	19	41	37	6 36	30
7	Th		17	43	18	D ſets	N
8	F		15	45	14 59	6 a 30	2
9	S	Hilary, 4th return	13	47	40	7 42	3
10	F	1 Sunday in Lent	11	49	21	8 54	4
11	M		9	51	1	10 6	5
12	Tu	Hilary Term ends	8	52	13 41	11 20	6
13	W	Ember Week. *Old Can.day*	6	54	21	morn	7
14	Th	*Valentine*	4	56	1	0 36	8
15	F		2	58	12 40	1 49	9
16	S		0	5 0	20	2 57	10
17	F	2 Sunday in Lent	6 58	2	11 59	3 57	11
18	M		56	4	38	4 44	12
19	Tu		54	6	16	5 21	13
20	W		52	8	10 55	5 51	14
21	Th		51	9	33	D riſes	F
22	F		49	11	11	7 a 7	16
23	S		47	13	9 50	8 23	17
24	F	S. in L. St. Matthi. Pr. (Ad. Fred. b.	45	15	27	9 41	18
25	M		43	17	5	10 56	19
26	Tu		41	19	8 43	morn	20
27	W		39	21	20	0 8	21
28	Th		37	23	7 58	1 15	22
29	F		35	25	35	2 13	23

Days	L. of D.	Day Inc.	D. breaks	Tw. ends	Sun Eaſt	Cl. bef. S.	7 Stars So.
1	9 6	1 22	5 32	6 28	5 3	14' 3"	6 a 34
6	22	38	24	36	9	32	13
11	42	58	16	44	14	40	5 53
16	10 0	2 16	7	53	20	29	34
21	18	34	4 58	7 2	26	1	15
26	38	54	49	11	32	13 17	4 56

New Moon,	7th,	33m. paſt 11 night.	Sun enters ♈
Firſt Quarter,	15th,	19m. paſt 5 morn.	
Full Moon,	21ſt,	0m. paſt 12 night.	19d. 10h. 3m.
Laſt Quarter,	29th,	25m. paſt 4 aftern.	

1	S	David		6	33	5	27	7 s 12	3 m 2	24
2	E	4 or Midle. S.	Chad		31		29	6 49	3 42	25
3	M				29		31	26	4 15	26
4	Tu				27		33	3	4 40	27
5	W				25		35	5 40	5 2	28
6	Th				23		37	17	5 24	29
7	F	Perpetua			21		39	4 53	☽ ſets	N
8	S				19		41	30	6 a 43	2
9	E	5 Sun. in Lent.			17		43	6	7 57	3
10	M				15		45	3 43	9 13	4
11	Tu				13		47	19	10 29	5
12	W	Gregory			11		49	2 56	11 44	6
13	Th				9		51	32	morn	7
14	F	Camb. Term ends			7		53	8	0 55	8
15	S	Orf. Term ends			5		55	1 45	1 56	9
16	E	6 Sun. in L. Palm Sun.			3		57	21	2 44	10
17	M	St. Patrick			1		59	0 57	3 23	11
18	Tu	Edw. K. of W. Saxons		5	59	6	1	34	3 56	12
19	W				57		3	10	4 23	13
20	Th	Maunday Thurſday			55		5	0 n 14	4 45	14
21	F	Good Friday	Benedict		53		7	37	☽ riſes	F
22	S				51		9	1 1	7 a 22	16
23	E	Eaſter Day			49		11	25	8 39	17
24	M	Eaſter Monday			47		13	48	9 55	18
25	Tu	Eaſter Tueſday. Annun. or			45		15	2 12	11 4	19
26	W	[Lady Day			43		17	35	morn	20
27	Th				41		19	59	0 7	21
28	F				39		21	3 22	1 0	22
29	S				37		23	45	1 44	23
30	E	Low Sunday			36		24	4 9	2 21	24
31	M				34		26	32	2 50	25

Days	L. of D.	Day Inc.	D.breaks	Tw. ends	Sun Eaſt	Cl. bef. S.	7 Stars So.
1	10 54	3 10	4 42	7 18	5 37	12′ 31″	4 a 41
6	11 14	30	31	29	43	11 22	23
11	34	50	20	40	49	10 3	5
16	54	4 10	10	50	56	8 38	3 46
21	12 14	30	0	8 0	6 2	7 7	28
26	34	50	3 48	12	8	5 35	10

New Moon,	6th, 17m. past 1 aftern.	
First Quarter,	13th, 52m. past 11 morn.	Sun enters ♉
Full Moon,	20th, at noon.	18d. 22h. 47m.
Last Quarter,	28th, 39m. past 11 morn.	

1	Tu		5 32	6 28	4s 55	3 m 13	26
2	W	Def. and Cam. T. begin	30	30	5 18	3 35	27
3	Th	Richard	28	32	41	3 54	28
4	F	St. Ambrose	26	34	6 4	4 13	29
5	S	Old Lady day	24	36	26	4 30	30
6	H	2 Sunday after Easter	22	38	49	D sets	N
7	M	Easter Term 1 return	20	40	7 11	8 a 22	2
8	Tu		18	42	34	9 40	3
9	W	Easter Term begins	16	44	56	10 52	4
10	Th		14	46	8 18	11 57	5
11	F		12	48	40	morn	6
12	S		10	50	9 2	0 50	7
13	F	3 Sunday after Easter	8	52	24	1 33	8
14	M	Easter Term 2 return	6	54	45	2 6	9
15	Tu		5	55	10 6	2 34	10
16	W		3	57	28	2 57	11
17	Th		1	59	49	3 19	12
18	F		4 59	7 1	11 9	3 39	13
19	S	Alphege	57	3	30	4 0	14
20	H	4 Sunday after Easter	55	5	51	D rises	F
21	M	Easter Term 3 return	53	7	12 11	8 a 53	16
22	Tu		51	9	31	9 58	17
23	W	St. George.	50	10	51	10 56	18
24	Th		48	12	13 10	11 44	19
25	F	St. Mark Prs. Maryb. 1776	46	14	30	morn	20
26	S		44	16	49	0 24	21
27	F	Rogation Sunday	42	18	14 8	0 55	22
28	M	Easter Term 4 return	40	20	27	1 22	23
29	Tu		39	21	45	1 43	24
30	W		37	23	15 4	2 2	25

Days	L. of D.	Day Inc.	D. breaks	Tw. ends	Sun Fast	Cl. bef. S.	7 Stars So.
1	12 56	5 12	3 31	8 31	6 16	3' 43"	2 a 48
6	13 16	32	19	43	22	2 14	30
11	36	52	4	58	28	0 49	11
16	54	6 10	2 52	9 11	34	0 a 27	1 53
21	14 14	30	38	25	39	1 33	34
26	22	48	23	4	45	2 29	15

New Moon, 6th, 46m. before 1 morn.	
Firft Quarter, 12th, 33m. paft 5 aftern.	Sun enters ♊
Full Moon, 20th, 8m. paft 1 morn.	19d. 23h. 21m.
Laft Quarter, 28th, 33m. paft 4 morn.	

1	Th	Afcenf. St. Phi. & James	4 35	7 25	15 s 22	2 m 21	26
2	F	Eafter Term 5 return	34	26	39	2 39	27
3	S	*Invention of the Crofs*	32	28	57	3 0	28
4	E	Sunday after Afcenfion	30	30	16 14	3 21	29
5	M	Eafter Term ends	28	32	31	3 48	30
6	Tu	*John Ev. ante Port. Lat.*	27	33	48	☽ fets	N
7	W		25	35	17 4	9 a 51	2
8	Th	☉ Xf. Term ends	23	37	21	10 49	3
9	F		22	38	37	11 36	4
10	S		20	40	52	morn	5
11	E	Whit Sunday	19	41	18 7	0 12	6
12	M	Whit Monday *O.MayDay*	17	43	22	0 42	7
13	Tu	Whit Tuefday	16	44	37	1 5	8
14	W	Ember Week	14	46	51	1 27	9
15	Th		13	47	19 5	1 48	10
16	F		11	49	19	2 7	11
17	S		10	50	33	2 29	12
18	E	Trinity Sunday	8	52	46	2 54	13
19	M	Q.Char.b. *Dunftan.* Trin.	7	53	58	3 24	14
20	Tu	[Te. 1 re.	6	54	20 11	☽ rifes	F
21	W	☉ Xf. Term begins	4	56	23	9 a 41	16
22	Th	Prs. Eliz. b. *Cor. Chrifti*	3	57	34	10 22	17
23	F	Trinity Term begins	2	58	46	10 57	18
24	S		0 8 0		57	11 24	19
25	E	1 Sunday after Trinity	3 59	1	21 7	11 46	20
26	M	*Auguftin.* Tri. Te. 2 ret.	58	2	18	morn	21
27	Tu	*Ven. Bede*	57	3	28	0 7	22
28	W		56	4	37	0 26	23
29	Th	K. Cha. II. Reftored 1660	55	5	46	0 43	24
30	F		54	6	55	1 1	25
31	S		53	7	22 3	1 21	26

Days	L. of D.	Day Inc.	D. breaks	Tw. ends	Sun Eaft	Cl. aft. S.	7 Stars So.
1	14 50	7 6	2 5	9 59	6 50	3' 12"	0 a 56
6	15 6	22	1 51	10 13	56	42	37
11	22	38	29	35	7 0	58	18
16	38	54	6	59	5	59	11 m 58
21	52	8 8	0 30	11 36	9	45	39
26	16 4	20	No real Night		12	18	19

New Moon,	4th,	58m. paſt	8 morn.	
Firſt Quarter,	10th,	38m. paſt	11 night.	Sun enters ♋
Full Moon,	18th,	26m. paſt	3 aftern.	20d. 8h. 2m.
Laſt Quarter,	26th,	40m. paſt	6 aftern.	

1	E	1 Sun. af. Trin. *Nicomede*	3 52	8 8	22s11	1 m 45	27
2	M	Trin. Term 3 return	51	9	19	2 14	28
3	Tu		50	10	26	2 52	29
4	W	K. Geo. III. b. 1738	49	11	33	☽ ſets	N
5	Th	Pr. Er. Aug. b. 1771. *Bonif.*	49	11	40	9 a 27	2
6	F		48	12	46	10 11	3
7	S		47	13	51	10 43	4
8	E	2 Sun. aft. Trinity	47	13	57	11 8	5
9	M	Trinity Term 4 return	46	14	23 1	11 31	6
10	Tu		46	14	6	11 51	7
11	W	St. Barnabas. Tri. T. ends	45	15	10	morn	8
12	Th		45	15	14	0 10	9
13	F		44	16	17	0 32	10
14	S		44	16	20	0 56	11
15	E	3 Sun. after Trin.	44	16	22	1 23	12
16	M		43	17	24	1 57	13
17	Tu	*St. Alban*			26	2 38	14
18	W				27	☽ riſes	F
19	Th				28	8 a 52	16
20	F	*Tranſ. Edw. K. W. Sax.*			28	9 24	17
21	S	Longeſt Day			28	9 46	18
22	E	5 Sun. after Trin.			27	10 7	19
23	M				27	10 25	20
24	Tu	Nativity of St. J. Baptiſt			25	10 43	21
25	W		43	17	23	11 1	22
26	Th		44	16	21	11 19	23
27	F		44	16	19	11 40	24
28	S		44	16	16	morn	25
29	E	6 S. aſ. Trin. St. Peter	45	15	12	0 6	26
30	M		45	15	9	0 38	27

Longeſt Day at Lond. is 16h. 34m. 4ſec.

allowing 9m. 16ſec. for refraction.

Days	L. of D.	Day Inc.	D. breaks	Tw. ends	Sun Eaſt	Cl. aft. S.	7 Stars So.
1	16 16	8 32			7 16	2′ 31″	10 m 54
6	24	40	No night, but	18	1 41	34
11	30	46	conſtant day	19	0 44	14
16	34	50	or twilight.	20	0 b 19	9 55
21	34	50		21	1 25	32
26	32	ode. 2		20	2 28	12

New Moon,	3d,	15m. paſt	4 attern.	
Firſt Quarter,	10th,	33m. paſt	7 morn.	Sun enters ♌
Full Moon,	18th,	34m. paſt	6 morn.	21d. 18h. 53m.
Laſt Quarter,	26th,	10m. paſt	6 morn.	

1	Tu	Cam. Commencement	3 46	8 14	23 s 5	1 m 22	28
2	W	Viſitation of Virgin Mary	46	14	0	2 19	29
3	Th	Dog Days begin	47	13	22 55	D ſets	N
4	F	Tranſ. of St.Ma. Ca. T.e	48	12	50	8 a 34	2
5	S	Old Midſummer day	48	12	44	9 5	3
6	E	7 Sunday after Trinity	49	11	38	9 29	4
7	M		50	10	31	9 51	5
8	Tu		50	10	24	10 9	6
9	W		51	9	17	10 32	7
10	Th		52	8	9	10 55	8
11	F		53	7	1	11 21	9
12	S		54	6	21 53	11 53	10
13	E	8 Sunday after Trinity	55	5	44	morn	11
14	M	Orford Act	56	4	34	0 32	12
15	Tu	Swithin	57	3	25	1 18	13
16	W		58	2	15	2 11	14
17	Th		4 0	0	5	3 11	15
18	F		1	7 59	20 54	D riſes	F
19	S	Orf. Term ends	2	58	43	8 a 10	17
20	E	9 Sun. af. Trin. Margaret	3	57	32	8 29	18
21	M		5	55	20	8 46	19
22	Tu	Magdalen	6	54	8	9 4	20
23	W		7	53	19 55	9 22	21
24	Th		9	51	43	9 43	22
25	F	St. James	10	50	30	10 6	23
26	S	St Anne	11	49	16	10 36	24
27	E	10 Sunday after Trinity	13	47	3	11 11	25
28	M		14	46	18 49	morn	26
29	Tu		16	44	34	0 0	27
30	W		17	43	20	1 2	28
31	Th		18	41	5	2 16	29

Days	L. of D.	Day dec.	D. breaks	Tw. ends	Sun Eaſt	Cl. bef. S.	7 Stars So.
1	16 28	0 6			7 19	3' 28"	8 m 51
6	22	12			17	4 20	31
11	14	20	No real Night		15	5 4	10
16	4	30			12	5 38	7 50
21	15 50	44			9	5 58	30
26	38	56	0 46	11 11	5	6 4	10

New Moon, 1ft, 6m. paſt 11 night.	
Firſt Quarter, 8th, 36m. paſt 6 aftern.	Sun enters ♍
Full Moon, 16th, 57m. paſt 9 night.	22d. 1h. 14m.
Laſt Quarter, 24th, 39m. paſt 3 aftern.	
New Moon, 31ſt, 34m. paſt 6 morn.	

1	F	Lammas Day	4	20	7 40	17 49	D ſets		N
2	S			22	38	34	7 a 28		2
3	E	11 Sunday after Trinity		24	36	18	7 51		3
4	M			25	35	2	8 13		4
5	Tu			27	33	16 46	8 36		5
6	W	Transfiguration		28	32	29	9 c		6
7	Th	Prs. Amelia b. 1783 Name		30	30	12	9 25		7
8	F	[of Jeſus		32	28	15 55	9 55		8
9	S			34	26	3	10 32		9
10	E	12 S. a. Tri. St. Lawrence		35	25	2	11 16		10
11	M	Prs. Brunſ. b. Dog D. e.		37	23	2	morn		11
12	Tu	Pr. Wales b. O. Lam. day		39	21	14 44	0 8		12
13	W			41	19	25	1 6		13
14	Th			42	18	7	2 8		14
15	F	Aſſumption		4	16	13 48	3 13		15
16	S	Duke of York born 1763		46	14	29	D riſes		F
17	E	13 Sunday after Trinity		48	12	10	6 a 55		17
18	M			50	10	12 50	7 14		18
19	Tu			51	9	30	7 34		19
20	W			53	7	10	7 53		20
21	Th	Pr. Wm. Hen. b. 1765		55	5	11 50	8 16		21
22	F			57	3	30	8 4		22
23	S			59	1	10	9 15		23
24	E	14 S. af. Tri. St. Bartho.	5 1	6 59	10 49	9 5		24
25	M			2	58	28	10 52		25
26	Tu			4	56	7	11 58		26
27	W			6	54	9 46	morn		27
28	Th	St. Auguſtine		8	52	25	1 16		28
29	F	Beheading of John Baptiſt		10	50	3	2 30		29
30	S			12	48	8 42	4 6		30
31	E	15 Sunday after Trinity		14	46	20	D ſets		N

length of Day	Day dec.	D.o. makes	Tw. ends	Sun Eaſt	Cl. bef. S.	7 Stars ſo
1 15	-20	1 14	1 24	10 33	6 59	5 51″	6 m 40
6	4	30	44	13	54	5 23	27
11 14	46	48	2 2	9 56	49	4 42	8
16	23	2 6	20	38	44	3 47	5 49
21	10	24	35	23	38	2 39	30
26 3	52	42	50	6	33	1 10	12

First Quarter,   7th, 18m. past 9 morn.
Full Moon,   15th, 10m. past 7 aftern.
Last Quarter, 22d, 38m. past 11 night.
New Moon,   29th, 45m. past 3 aftern.

Sun enters ♎
21d. 21h. 42m.

1	M	Giles	5 16	6 44	7 58	6 a 44	2
2	Tu	London burnt 1666	18	42	36	7 8	3
3	W		20	40	14	7 33	4
4	Th		22	38	6 52	8 3	5
5	F		23	37	29	8 38	6
6	S		25	35	7	9 20	7
7	E	16 Sun. a. Trin. Enurchus	27	33	5 44	10 9	8
8	M	Nativity of the V. Mary	29	31	22	11 5	9
9	Tu		31	29	4 59	morn	10
10	W		33	27	36	0 6	11
11	Th		35	25	13	1 11	12
12	F		37	23	3 57	2 17	13
13	S		39	21	27	3 23	14
14	E	17 S. af. Trin. Holy-Cross	41	19	4	4 31	15
15	M		43	17	2 41	D rises	F
16	Tu		45	15	18	6 a 9	17
17	W	Ember Week. Lambert	47	13	1 55	6 31	18
18	Th		49	11	31	6 58	19
19	F		51	9	8	7 28	20
20	S		53	7	0 45	8 8	21
21	E	18 S. af. Tri. St. Matthew	55	5	21	8 57	22
22	M	K. Geo. III. crown. 1761	57	3	s 2	9 58	23
23	Tu		59	1	26	11 9	24
24	W		6 1	5 59	40	morn	25
25	Th		3	57	1 1	0 28	26
26	F	St. Cyprian	4	56	36	1 50	27
27	S		6	54	59	3 13	28
28	E	19 Sunday after Trinity	8	52	2 23	4 36	29
29	M	St. Mich. Prs. Ch. A. M. b	10	50	46	D sets	N
30	Tu	St. Jerome	12	48	3 10	5 a 43	2

Days	L. of D.	Day dec.	D. breaks	Tw. ends	Sun East	r. aft. S.	Stars So.
1	13 28	3 0	3 7	8 53	6 20	0' 29"	4 m 50
6	10	24	21	30	20	2 7	3 4
11	12 50	44	34	26	14	3 49	14
16	30	4 4	45	15	7	5 33	3 56
21	10	24	56	4	1	7 17	3 2
26	11 52	42	4 7	7 53	5 55	0 9	2 ?

First Quarter,	7th, 28m. past	3 morn.
Full Moon,	15th, 50m. past	3 morn.
Last Quarter,	22d, 4 m. past	6 morn.
New Moon,	29h, 29m. past	3 morn.

Sun enters ♏
22d. 5h. 39m.

1	W	Remigius	6	14	5	46	3 5 33	6 a 9	3
2	Th			16		44	56	6 45	4
3	F			18		42	4 20	7 25	5
4	S			20		40	43	8 11	6
5	E	20 Sunday after Trinity		22		38	5 6	9 5	7
6	M	Faith		24		36	29	10 5	8
7	Tu			26		34	52	11 8	9
8	W			28		32	6 15	morn	10
9	Th	St. Denys		30		30	30	0 12	11
10	F	Oxf. and Cam. T. beg.		32		28	7 0	1 19	12
11	S			34		26	23	2 26	13
12	E	21 Sunday after Trinity		36		24	46	3 34	14
13	M	Trans. of K. Edw. Conf.		38		22	8 8	4 42	15
14	Tu			40		20	30	5 42	16
15	W			42		18	53	☽ rises	F
16	Th			44		16	9 15	5 a 35	18
17	F	Etheldred		45		15	37	6 14	19
18	S	St. Luke		47		13	58	6 59	20
19	E	22 Sunday after Trinity		49		11	10 20	7 59	21
20	M			51		9	42	8 8	22
21	Tu			53		7	11 3	10 21	23
22	W			55		5	24	11 41	24
23	Th			57		3	45	morn	25
24	F			59		1	12 6	1 2	26
25	S	K. Geo. III. Accef. Crisp.	7	1	4	59	27	2 22	27
26	E	23 S. a. Trin. K. Geo. III		3		57	47	3 42	28
27	M	(Procl. 1760		4		5	13 7	5 2	29
28	Tu	St. Simon and Jude		6		54	27	6 21	30
29	W			8		52	47	☽ sets	N
30	Th			10		50	14 7	5 a 22	2
31	F			12		49	20	6 7	3

Days	L. of D.		Day dec.		D. breaks		Tw. ends		Sun East		Cl. aft. S.		7 Stars So.	
1	11	32	5	2	4	19	7	41	5	49	10'	37"	3 m	3
6		12		22		30		30		43	12	7	2	45
11	10	52		42		40		20		36	13	25		26
16		32	6	2		50		10		30	14	31		7
21		14		20		59		1		24	15	23	1	49
26	9	54		40	5	8	6	52		18	15	58		28

First Quarter,	5th,	53m. paſt	11 night.	Sun enters ♐
Full Moon,	13th,	40m. paſt	5 even.	21d. 1h. 52m.
Laſt Quarter,	20th,	49m. paſt	1 aftern.	
New Moon,	27th,	10m. paſt	6 even.	

1	S	All Saints　　　　[Souls	7 14	4 46	14 45	6 a 59			4
2	E	24 S. af. Tr. Pr. Ed. b.　All	15	45	15 4	7 58			5
3	M	Frs. Soph. b.　Mic. T. 1 ret.	17	43	23	8 59			6
4	Tu		19	41	42	10 3			7
5	W	Powder Plot, 1605	21	39	16 0	11 9			8
6	Th	Leonard. Mich. Ter. beg.	23	38	18	morn			9
7	F	Duke of Cumb. b. 1745	24	36	35	0 13			10
8	S	Pr. Aug. Soph. bo. 1758	26	34	53	1 18			11
9	E	25 Sunday after Trinity	27	33	17 10	2 27			12
10	M	Ld. Mayor's Day at Lond.	29	31	26	3 36			13
11	Tu	St. Martin	31	29	43	4 47			14
12	W	Mich. Term 2 return	32	28	59	5 59			15
13	Th	Britius	34	26	18 15	☽ riſes			F
14	F		36	24	30	4 a 55			17
15	S	Machutus	37	23	45	5 51			18
16	E	26 Sunday after Trinity	39	21	19 0	6 56			19
17	M	Hugh Bp. of Lincoln	40	20	15	8 7			20
18	Tu	Mich. Term 3 return	42	18	29	9 30			21
19	W		43	17	43	10 49			22
20	Th	Edmund K. and M.	44	16	56	morn			23
21	F		46	14	20 9	0 9			24
22	S	Cecilia. Old Mart. day	47	13	22	1 26			25
23	E	27 S. af. Tri.　St. Clement	48	12	34	2 38			26
24	M		50	10	46	4 1			27
25	Tu	D. Glou. b. Catharine. Mi.	51	9	58	5 15			28
26	W	[Term 4 re.	52	8	21 9	6 28			29
27	Th		53	7	20	☽ ſets			N
28	F	Mich. Term ends	54	6	3	4 a 43			2
29	S		56	4	40	5 38			3
30	E	Advent Sun.　St. Andrew	57	3	50	6 39			4

Days	L. of D.	Day dec.	D. break	Tw. ends	Sun Faſt	Cl. aft. S.	7 Sta.	So.
1	9 32	7 2	5 17	6 43	5 12	16′ 15″	1 m 7	
6	16	18	24	36	6	16 7	0 47	
11	58	36	30	30	1	15 38	27	
16	8 42	52	36	24	4 56	14 48	6	
21	28	8 6	43	17	52	13 37	11 a 41	
26	16	18	49	11	48	12 6	20	

First Quarter,	5th,	46m. past 8 night.	
Full Moon,	13th,	22m. past 6 morn.	Sun enters ♑
Last Quarter,	19th,	4m. past 10 night.	2cd. 14h. 14m.
New Moon,	27th,	31m. past 11 morn.	

			Sun rise	Sun set		D rise/set	
1	M		7 58	4 2	21 59	7 a 45	5
2	Tu		59	1	22 8	8 49	6
3	W		8 0	0	16	9 53	7
4	Th		0	0	24	10 58	8
5	F		1	3 59	31	morn	9
6	S	*Nicholas*	2	58	38	0 3	10
7	E	2 Sunday in Advent	3	57	45	1 9	11
8	M	*Conception of V. Mary*	4	56	51	2 18	12
9	Tu		4	56	56	3 27	13
10	W		5	55	23 2	4 40	14
11	Th		5	55	6	5 53	15
12	F		6	54	11	7 2	16
13	S	*Lucy*	6	54	14	D rises	F
14	E	3 Sunday in Advent	7	53	18	5 a 41	18
15	M		7	53	21	7 2	19
16	Tu	O Sap. **Cam.** Term. ends	7	53	23	8 23	20
17	W	Ember Week. **Oxf.** T. e.	8	52	25	9 47	21
18	Th				26	11 6	22
19	F				27	morn	23
20	S				28	0 23	24
21	E	4 S. in Ad. St. Tho. Sho. D.			28	1 38	25
22	M				27	2 53	26
23	Tu				27	4 5	27
24	W		8	52	25	5 12	28
25	Th	Christmas Day	7	53	23	6 16	29
26	F	St. Stephen	7	53	21	7 7	30
27	S	St. John	7	53	18	D sets	N
28	E	1 Sun. af. Chri. Innocents	6	54	15	5 a 16	2
29	M		6	54	1:	6 21	3
30	Tu		5	55	7	7 27	4
31	W	*Silvester*	5	55	2	8 32	5

Shortest D. at Lond. is 7h. 44m. 17s.   *allowing 9m. 5s. for refraction.*

Day	at D.	Day dec	D. break	tw. ends	Sun Fast	Cl. aft. S.	Stars So
1	8 4	8 30	5 55	6 5	4 45	10' 18"	10 a 59
6	7 56	38	58	2	43	8 14	37
11	50	44	59	1	41	5 58	15
16	46	48	6 0	0	40	3 32	9 53
21	44	50	1	5 59	39	1 2	31
26	46	0 inc 2		6 0	40	1b. 27	9

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CHRONOLOGICAL NOTES, &c. in 1788.

Dominical Letters	F E	Septuage. Sun.	Jan. 20	Ascension Day	May 1
Golden Number	3	Shrove Sunday	Feb. 3	Whit-Sunday	11
Epact	22	Lent begins	6	Trinity-Sunday	18
Cycle of the Sun	5	Easter Day	March 23	Advent-Sun.	Nov. 30
Roman Indiction	6				

ECLIPSES, &c.

THERE will be only two eclipses this year, and those both of the Sun, the one visible, and the other invisible,—I. A visible eclipse of the sun in the morning of June 4; the beginning at 7h. 24½m. in the morning, the middle at 8h. 11m.; and the end at 9h.; the digits being 3° 59' on the southern limb.—II. The sun will be eclipsed Nov. 27, about 10m. after 6 in the evening, or near 2 hours after sun-set, and therefore invisible here.

VENUS is an evening star till Aug. 8; and afterwards a morning star.

JUPITER is an evening star till June 29; and afterwards a morning star.

ANSWERS to the ENIGMAS.

1	Hope	4	Saddle	7	Bell	1 Pillow
2	Warming Pan	5	Nightingale	8	Auctioneer	11 May Day
3	Sleep	6	Nothing	9	Paper	12 or Prize, Sunday.

The Prize Enigma *answered in a Charade*, *by Mr.* R. Richardson.

See, to my *first*, the prostrate Persian bow,
And with low rev'rence pay his morning vow;
The soaring lark, sweet " herald of the morn!"
Proclaims my *next* o'er fields of waving corn.
Hail! *sacred whole*, blest day of rest and peace!
When gracious heav'n bids care and sorrow cease.

The same answered by Ecclesiæ.

Rev'rence the Sabbath, O ye charming fair;
And let the Sunday-schools your bounty share.

The same by Mr. Thomas Truswell, *of Nuneaton.*

All hail! sweet morn, thou bright auspicious day;
May all mankind thy sacred laws obey:
May bounteous heav'n, dear ladies, pour on you
Celestial blessing, like the morning dew;
May you, when time itself no more shall be,
A Sabbath keep to all eternity.

Maria's *answer to the same.*

When God from chaos call'd this pond'rous globe,
He in six days perform'd th' amazing plan.
When finish'd, his blest world pronounc'd it good;
The seventh, proclaim'd a solemn pause for man.—
Tho' chang'd the day, the Sabbath still the same;
Let it be kept in reverence to his name.

An Acrostical answer by Mr. Wm. Bearcroft, *of Newton.*

S o God, by wisdom infinite, ordain'd,
A nd by example of his own confirm'd,
B oth unto man and beast, a day of rest.
B lest Sabbath! May we all with rev'rence keep,
A nd with profound devotion spend, that day,
T ill nature cease : then with the saints above,
H igh seated near the throne at God's right hand,
Enjoy a Sabbath of eternal rest.

The same answered by Mrs. F. C. *North Shields.*

First and best day of all the Seven,
On which we're taught the way to heaven,
And grace and glory are the prizes given.

The same by Mr. G. Lodge, *of Linton.*

Hail ever-sacred day! when God did rest
From all created works, and call'd them blest ;
Hail christian Sabbath! since it was on thee
Death lost his sting, the Grave his victory.

The same by Mr. G. Simkin, *of Finedon.*

The prize Enigma sure doth say,
It is the blessed Sabbath day,
In which good christians read and pray.

The same by Mr. T. Nield, *Writing Master of Howarden School.*

Sweet Hallelujah! may thy solemn sound
On every Sunday in each church resound.

The same by Mr. Rich. Dening, *of Chardstock, Dorset.*

How sweet, how elegant, how gay
Are Sphinx's lines on Sabbath day.

Mr. W. P. Burman *thus answers it.*

The Sabbath keep, in virtue's cause be wise,
And endless bliss will be th' important prize.

The same answered by Miss Louisa Harpur.

How Israel's sons we christians did excel
In keeping Sabbaths, holy records tell :
The hapless wretch who did this day profane,
To a sad death their statutes did ordain.
Our Sabbath wears a holy, rev'rend form ;
Its rituals, sense and piety adorn.
Yet foulest acts deform its lovely face,
And cold neglect its sacred laws disgrace.
Sunday's scarce mark'd, but as a day to spend
In slothful ease, or pleasure's call attend.

The Prize Enigma *anſwered by* Kit Went.

Bleſt be the man whoſe lib'ral heart
  Our Sunday ſchools began!
To train the youth in virtue's path
  How godlike is the plan.

If ought on earth can merit praiſe,
  Or heaven's favour gain,
To lead the youth in wiſdom's ways,
  Muſt ſurely both obtain.

The ſame, by Mr. Henry Holme, *of* Sleagill, *near* Appleby.

You all know, I dare ſay,
  Brother Scrub in the play,
At a bumper was ne'er known to fail;

Ev'ry day in the week
From work he would ſneak, [ale.
Save on Sunday, when bottling good

Other ingenious ſeparate Anſwers to the Prize Enigma, which we have not room for here, are inſerted at length, with the names of all the other Anſwerers, in our Supplement to the Ladies' Diary, *printed this year, for the firſt time, and ſold ſeparate, price Six-pence; containing alſo general Solutions of the* Enigmas, Rebuſes, *and* Charades, *as alſo a complete Alphabetical Liſt of the names, with the numbers, of all the* Enigmas *that have been given in the* Diaries, *from their commencement in the year* 1704, *down to the preſent time.*

All the Enigmas anſwered by the Rev. T. Baker.

Ladies, once more, your humble ſuppliant comes,
  By *Hope* ſupported to your ſpacious rooms.   1
As twilight uſhers in the new born *May*,   11
Here meek-ey'd Charity leads on the way.
No tuneful *Philomel* withholds your *ſleep*,   5, 3
Nor *Auctioneer*, with all's too cheap—too cheap;   8
No *Saddled* Courſer at your *Bell* appears,   4, 7
But your fam'd *Paper* the petition bears.   9
  Here then, ye *Fair*—ye learned, rich and great,
For *Sunday ſchools*, I come an advocate.   12
An inſtitution on as uſeful plan,
Perhaps, as ever reach'd the heart of man;
None better calculated to improve
The mind in true benevolence and love;
Your kind protection muſt ſecure ſucceſs,
And thouſands draw from ſcenes of wickedneſs.
Here they're united in one friendly band,
And to the houſe of God go hand in hand;
Their parents too, will oft well pleas'd repair,
To meet their children in the houſe of pray'r.
Wou'd you, each Sabbath, to the ſacred dome,
See the vaſt offspring of th' unlearned come?
Or ſwift from miſchief, ignorance and play,
Theſe candidates for glory draw away?—
Wou'd you, when on the bed of ſickneſs laid,
Gladly receive your bleſt Redeemer's aid?—
On your *Warm Pillow*, languiſhing in pain,   2, 10
Wou'd you that great Phyſician's help obtain;
And in the melancholy hour of death,
Amidſt his ſmiles, in peace reſign your breath:
Nothing beneath the ſun will chear you more,   6
Than that which you have done to ſave the poor.

               B   *The*

The same answered by Miss Betty Smales.

Does Eland suppose, like an old *Auctioneer,*   8
   Exalted above us to proffer
Old *Pillows,* old *Warming-pans, Saddles* and gear, 10, 2, 4
  I'm glad to accept a good offer?

Not so, gentle youth—in the bloom of my years,
  New sweethearts I get when I please,
My *Sleep's* undisturb'd with domestical cares,   3
  I enjoy a sweet *Sabbath* of ease.   12

You may waste ink and *Paper,* and puzzle your brain 9
  On subjects more worthy your muse,
Kind answers from me you shall never obtain,
  Nor is it unjust to refuse.

Say why does the swain breathe his balsamic fire?
  Tho' *Nothing* can equal his verse,   6
It kindles not *Hope*—yet his strokes I admire,   1
  But hark—I've a tale to rehearse.

Last *May-day,* as blithsome I danc'd on the green, 11
  Amidst the gay rustical throng,
The lads of the village all hail'd me their queen,
  And the shepherds were pleas'd with my song.

Young Damon the lovely, the pride of the swains,
  Enraptur'd attended the while,
Then talk'd about love in such heart-stealing strains,
  That I could not refuse him a smile.

Rich garlands of blue-*bells,* and primroses sweet, 7
  He drest up with negligent art,
My hand to salute he oft kneel'd at my feet,
  And he whisper'd away my fond heart.

Since when, if I meet him in mead or in grove,
  As careless I ramble along,
Sweet *Philomel* echos the praise of my love,   5
  And Damon approves of my song.

Mr. Tho. Woolston's *Answer to the Enigmas, Rebuses, and Charades. Addressed to the ingenious Supporters of* Lady Diaria.

In a peaceful warm spot, in a neat country town,
On the banks of the Charwell, I set myself down,
Some eight years ago, when I married a wife,   Enig.
In *Hopes* to improve the enjoyments of life.   1
E'er since fledg'd with comforts the moments have fled,
And peace and contentment have *pillow'd* my head. 10
No loud *auctioneer* here disturbs my *repose,*   8, 3
But I calmly look round at the world as it goes;
And tho' busy, in chearfulness passes the day,
And only am dull when Maria's away.

                               In

In return, whilſt I manage more weighty affairs,
She leaves *nothing* undone that can ſoften my cares.   6
So when the day's clos'd, to enliven the night,
I read the enigmas, which give her delight:
Of *warming pans*, *ſaddles*, of *Philomel*'s lay,   2, 4, 5
Of *Sunday*, of *paper*, of *bells*, and *May day*.   12, 9, 11, 7
Thus mutually pleas'd, without diſcord or ſtrife
We tranquilly glide down the river of life,
Nor wiſh from each other abroad more to roam,
Since we find our chief happineſs centers at home.

Meſſrs. *Richardſons*, *Pearſon*, and all who engage   Reb. 2, 4, 3
In the circle to grace fair Diaria's page,
Having read this ſhort ſketch, if you reliſh the plan,
And are willing to know ſomething more of the man,
You may find yours *T. Woolſton*, moſt days in the year,   1
Near the *Church-yard* at Adderb'ry, in fair Oxfordſhire.   Ch. 3
No fine Turkey *carpet* e'er fell to my lot,   1
But hearty kind welcome you'll find to my cot,
And the beſt it affords. Tho' I hope you're inclin'd
To a much higher banquet, the feaſt of the mind.
On the *rainbow* and *loadſtone*, ſuch topics ſublime,   2, 4
I could wiſh to converſe, to improve well the time.
And to pleaſe my fair gueſts we would paſs a few hours
'Mong the ſhrubs of Parnaſſus, in culling ſweet flowers,
To form a bouquet for the Diary next year,
If our Editor pleaſes to let it appear.

The ſame anſwered by Eugenio, of Banbury.

Behold, ye lovely Fair! exalted here
A novelty—a rhyming *auctioneer* :   8
One who defies the whole informing crew,
If regiſter'd, and licenc'd but by you.
For the kind look that every heart beguiles
Alone I ſell—and who ſhall tax your ſmiles? —
Firſt, then, ſince *pillows*, beds, and rooms are cold,   10
My patent ſtoves and *warming pans* behold :   2
But if the roſy bluſh of health you prize,
With prudence uſe them, or that bleſſing flies.
In vain ſhall cygnets then their down ſupply,
To lure ſoft *Slumbers* to the reſtleſs eye :   3
In vain ſhall *May* her blooming charms diſcloſe,   11
Paint the gay landſcape, ſcent the bluſhing roſe ;
In vain, *ſweet warbler!* (*nothing* can delight)   5, 6
Shall thy ſoft ſong the lengthen'd walk invite ;
Ev'n *dope* ſhall fail—but whither do I ſtray?   1
My *paper*, *ſaddles*, *bells*, will ne'er be ſold to-day   9, 4, 7
To-morrow then—yet hold—To-morrow's *Sunday*,   12
Requeſt we, then, your gentle ſmiles on Monday,

Sylvia's *Apology to* Castelio, *on his complaining of her asking him to write, and giving him no Subject.*

Castelio accept of my lay,
Awhile your resentment suspend,
Forgive the request of the day,
And Sylvia still is your friend.

'Twas cruel to ask, and not chuse
A theme for thy elegant wit,
But now, to assist the fond muse,
Twelve subjects I've luckily hit.

Hope, *warming-pan, pillow,* and *sleep,*
A *nightingale, paper,* and *b ll ;*
Of my *auction* I pray take a peep,
Sure one of the subjects will sell.

Four others remain still behind,
Nothing, May-day, a *saddle,* and *Sunday;*
Here matter enough you may find,
Should you write ev'ry moment till
　　　　　　　　　　　　[*Monday.*

The same answered by Mr. I. Townsend.

Hark ! the *aucti neer's* avowing,
Ink and *paper* by him stand ;
" Ladies now 'tis just a going,"
See the knocker in his hand.

Saddles, pans, nor *bells* invite me,
Polish'd steel, nor blazon'd arms,
Far more pleasant scenes delight me,
Full of sweet and lasting charms.

Lo ! a lovely train aspiring,
Walking in the ways of truth,
There, the heav'n-taught soul admi-
Animates the blooming youth. [ring,

Hope sits smiling on each feature,
Chearful as a *May-day* queen ;
Philomel, tho' lovely creature,
Never wore so bright a mien.

Heaven propitious on them shining,
Kindly deigns their steps to keep,
Thro' night's shades without repining,
Safely on their *pillows sleep.*

Free from slander and from folly,
Nothing can disturb their ease,
For they keep the *sabbath* holy.
Wisdom's ways are paths of peace.

Cousin Fanny's *Visit. By Miss* J. C. *of Bath.*

Long time I strove, but strove in vain,
Your prize enigma to explain.—
" The captain of a chosen few,
" Whose elder brother is a Jew :
" When this is rais'd, that is declin'd,"
Nothing in nature can I find
That will the least resemblance bring.
But hark ! I hear the door-*bell* ring :
'Tis cousin Fanny, ever seen
Blithsome as a *May-day* queen.
Come sit my love, and let me hear
How you like Lady Di. this year.
Why ma'am, indeed I like her well,
I think she this year doth excel
All I have seen ; for there you'll find
Most curious things of every kind.
An easy *saddle* they prepare,
For those inclin'd to take the air ;
But should the sky forebode a shower,
At an *auction* you may waste an hour.
Each ev'ning when the moon shines
　　　bright,
Sweet *Philomela* gives delight ;

Should balmy *sleep* his poppies shed,
There's downy *pillows* for your head ;
And what, dear ma'am, is strictly
　　　true,　　　　　　　　　　[too.
Lest you take cold, they'll *warm* them
This morning I brought these to light,
And 'pon my word I think they are
　　　right.
This morning coz ! I'm in surprize !
Why I've sought longer for the prize ;
And thou't success was giving o'er
The instant you rung at the door ;
But as all these you've found in one
　　　day,
I'll now *hope* for the prize by *Sunday.*
　　Come, Fanny, as we've sat so long,
We'll have a cup of nice souchong.
No, really, ma'am, I cannot stay ;
I'll call again another day,
Then we'll again the theme renew.
Your servant, ma'am,—Dear coz a-
　　　dieu.

The ſame anſwered by Mrs. Sarah Porril, formerly Miſs S. Walker.

Adieu ye melancholy ſhades,
Where *Philo.* ſung my wild deſires.
Ah fly, my ſoul, the lonely glades,
A huſband claims my *warmeſt* fires.

Tho' racking pangs, and grief and cares
Have my unſtable mind oppreſt,
I cheriſh *hope* that future years
May bring me *downy days* of *reſt.*

Our hearts for diff'rent cauſes bleed,
Paſſion and *pride* ſuch woes create;

But bounteous heav'n is kind indeed,
To hide from us the *page* of fate.

The ſhow of wealth I envy not,
Neither for fame nor titles long,
Simplicity em*belliſhes* our cot,
Far diſtant from the *bawling* throng.

I'll e'er prefer the friendly kind,
To them who breathe malignant breath;
In thoſe a healing balm we find,
In theſe we've *nought* but ſtings and death.

The ſame by Mr. Joſ. Cowing, Schoolmaſter, of Hexham.

My dear Lady Di,
This ev'ning I'll try
Your enigmas, tho' hid in diſguiſe;
In *hopes* to attain
Both *ſaddle* and fame, [prize.
If by chance you ſhould grant me the

But when I proceed,
Sleep puzzles my head, [ſtrain;
And the ringing of *bells* checks my
I ne'er in my life
Lov'd clamour or ſtrife,
So an *auctioneer's* life I diſdain.

My wife ſhe ſays Jo,
'Tis *Sunday* you know, [wed;
And *May-day* 12 months we were
The houſe was complete,
With furniture neat,
Both *pillows* and *pan* for the bed.

She ſpoke with ſuch grace,
Love glow'd in her face,
The *nightingale's* voice not more clear;
Tho' *nothing* pertains
To me for my pains;
Adieu to your *book* till next year.

Miſs Alexia Corney thus anſwers them.

Ye nymphs, and ye gay ruſtic ſwains,
Who joyouſly revel and play,
Prepare all the ſports of your plains.
With me come and hail the new *May*.

With pleaſure we'll carol along,
Hope tells us there's nothing to harm,
And *Philo.* ſhall ſwell the ſweet ſong,
And the *bells* ſhall the ſlumbers alarm.

On my *paper* I'll write to my ſwain,
I'll bid him his *pillow* forſake,
Nor *ſleep* any longer maintain,
But a *ſabbath* from labour to take.

We no *ſaddle* or *warming pan* need,
Nor for *auction* have here any room.
Come my Strephon, dear youth fly with
And to this feſtive holiday come. [ſpeed

On the Accompliſhment of ——, and addreſſed to ——.
By Mr. John Unwin, of Wirkſworth.

Emma's fair as ſweet *May-day*,
Handſome, witty, young, and gay;
Tuneful voice that far excels
Charming, plaintive *Philomel's.*
Virtue is her conſtant care,
Sabbath-day ſhe ſpends in prayer;

All the riddles ſoon can tell,
Paper, auctioneer, and *bell*;
When the myſtic veil ſhe clear'd,
Pan and *ſaddle* plain appear'd.
All the charms of womankind
Center in her form and mind.

O moſt worthy Emma fair !
Object of my tender care ;
Such the power your charms have wrought,
You're my conſtant wiſh and thought.

What a train of airy dreams
Round my *ſlumb'ring pillow* ſwims !
O my joy, my *hope* of life,
Condeſcend to be my wife ;
If you won't that bliſs impart,
Nothing can delight my heart.

Mr. G. R.'s *Complaint for the Flight of his Miſtreſs,*

Anſwering the Enigmas, Rebuſes, *and* Charades.

Fond *hope* has not fled from my breaſt,
Since Jenny hath quitted the plain ;
Al-s ! I'm a ſtranger to *reſt*,
I fear a more fortunate ſwain.

Could *nothing* entice her to ſtay !
The groves in full verdure are dreſt ;
And *Philomel* warbles her lay.
As if by my anguiſh *oppreſs*.

The fields like a *carpet* are ſpread,
With flowers of various dies ;
The *rainbow* that's ſeen over head,
Shews not half ſo fair to the eyes.

'Twas only laſt *Sunday* in *May*,
She *bid* me to hope for her hand ;

What then can *attract* her away !
I can't for my life underſtand.

I've conſulted my *pillow* each night,
And bro't each tranſaction to mind ;
But ſtill I'm bewildered quite,
A plauſible reaſon to find.

It ap-*pears-on* my ſide very bad,
And ſeems as I had miſbehav'd ;
Yet no quarrel we ever have had,
I vow as I hope to be ſav'd.

Should you ſee my fugitive fair,
Dear ladies pray write me a line ;
Or if I may find her ſay where,
To comfort this *warm* heart of mine.

All the Enigmas, Rebuſes, *and* Charades, *anſwered by* Minor.

One *Sunday* laſt *ſummer* I *ſaddled* my ſteed ;	12, 11, 4
For *Pearſon* and I over night had agreed	R. 3
A ſweet ſentimental excurſion to take,	
And viſits to *Woolſton* and *Richardſon* make.	R. 1, 4
Aſſur'd of a welcome with friends ſuch as theſe,	
Whom alike we eſteem, alike wiſh to pleaſe ;	
So with one we would dine, and juſt take a glaſs	
With 'tother the night we concluded to paſs.	
And, as buſineſs requir'd our ſpeedy return,	
We'd ſtart from the *pillow* betimes the next morn,	10
And not like poor *Philo*, lie *doſing* all day.	5, 3
This being premis'd, we both poſted away.	
No *rainbow* portentous of ſtorms did appear,	Ch. 2
And nature's rich *carpet* embelliſh'd the year.	Ch. 1
Admiring the proſpect we ſaunter'd along,	
And paſs'd the *church-yard* while the *bells* ſweetly rung :	Ch. 3. R. 7
For Damon, a ſtranger to love's lambent fire,	
That morning had wedded the niece of the ſquire,	
A dowdy who *nothing* but riches could boaſt ;	6
For which he a treaſure far greater has loſt,	
By leaving a nymph who for beauty and wit,	
None ever could vie, but *Jane Richardſon*, yet,	R. 2
As the wretch was unworthy a maid ſo div·ne,	
I hope the ſweet charmer will ſcorn to repine	

For

For a mean *auctioneer*, whose *loadstone* is pelf,   8, Cb. 4
And bargain'd for life with no care but for self.
The pleasure we sought in so pleasant a ride,
On this sad occasion was now laid aside ;
For home I return'd, quite resolv'd that ere night
The whole of this matter I fairly would write.
That it might in the *paper* next morning appear ;   9
And the story be blazon'd about far and near.

Other Solutions *of the* Enigmas, *with a list of the Names of the Answerers,* may be seen in our Supplement.

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ANSWERS *to the* REBUSES *and* CHARADES.

Rebuses. 1 Woolston,   2 Jane Richardson,   3 Pearson,   4 Richardson,
Charades. 1 Carpet,   2 Rainbow,   3 Church-yard 4 Loadstone.

Sylvia's *Answer to the* Rebuses.

Friend *Woolston* doth virtues possess,
Sobriety, honesty, truth ;
And each day his Maria doth bless,
Growing age for the cares of his youth.

Tho' *Richardson, Pearson* may crave,
I advise Bob to wed his fair cousin.
But hold ! a good wife he may have,
'Twould be vain then to pick out a dozen.

The Charades *answered by* Juvenis Boxoniensis.

By *Loadstone's* aid, with mathematic lore,
The mariner undaunted quits the shore,
In quest of gain that foreign clime affords,
From Persia's *carpet*, or Golconda's hoards :
Metes out the heaven to know its watry way,
Or *rain-bow* born from sol's reflected ray.
But should old Ocean on his projects frown,
Or ocean's author, for wise cause unknown,
Oppose in full extent his hopes, his care,
He sinks he dies, no peaceful *church-yard* there.

The Rebuses *and* Charades *answered by Mr.* John Jackson, *of* Hutton-Rudby *School.*

Tho' *Woolston* be versed in curious rhyme,
Jane Richardson also be fair ;
Tho' *Pearson* be virtuous too as the Nine,
And *Richardson* verses prepare :

On the *carpet* of life, thro' the well chequer'd year,
If the tokens of *rain-bow* they mind ;
In the *church yard* at last, they all must appear,
Death's *load-stone's* attraction they'll find,

The

The same answered by Mr. Philip Rusher.

Tho' *Woolston* or *Richardson* others excel
In painting a *Rain-bow*, or writing verse well ;
Tho' *Pearson* like loadstone attract by her hair,
Jane Richardson too be the pride of the fair ;
They all must submit (may far hence be that day)
Beneath the green *carpet* in *church-yard* to lay.

The WEDDING ; *by Miss* J. C.

What numbers are met in the *church-yard* below,
 They quite hide the gay *carpet* of green !
In colours more splendid than *Iris's bow*,
 The lovely *Jane Richardson's* seen.

Her silks are the choice of her brother, they say,
 Who, like *Woolston*, his muse makes his pride :
The *loadstone* which draws them together to day,
 Is that Walton makes *Pearson* a bride.

The same answered by Mr. John Fildes.

As Miss *Jane Richardson* and *Pearson* seem
Two beauties whom we can't enough esteem ;
So *Richardson* and *Woolston's* matchless lays
Deserve all honour, and excel all praise.

In the richest *carpet* we can only view
A faint resemblance of the *rain-bow's* hue ;
The church-yard swallows thousand's ev'ry year,
And the *loadstone* shews the seamen how to steer.

The Rebuses *answered by Mr.* William Bearcroft, *of* Nawton.

Miss *Richardson* is justly prais'd,
And *Pearson's* virtues sure have rais'd
 Friend Walton's am'rous fire :
When *Richardson* and *Woolston* deign
To sing in enigmatic strain,
 We wonder and admire.

The Charades *answered by Mr.* T. B.

Tho' haughty Turks their *carpets* tread,
 With *rainbow* colours dye ;
The *church-yard* is the *attractive* bed
 Where all distinctions lie.

The same answered by Mr. John Rusher, *of* Charlbury.

Ye who have large possessions of your own,
Who walk on *carpets*, and who sleep on down,
Whose raiments with the splendid *rainbow* vie,
Reflect—in each *church-yard* what numbers lie.

The

The fov'reign *loadſtone* which attracted them,
W.ll quickly draw you to the ſilent den.

See other Anſwers, with the liſt of Names, in the Supplement.

Answers *to the* Queries.

Query 1. *anſwered by Mr.* G. Lodge, *of* Linton.

Caoutchouc, Indian Rubber, or Leadeater, are names given to a very elaſtic gum or reſin, the produce of a tree which grows along the banks of the river of the Amazons. A very full account of which, and its ſingular properties, may be ſeen under the above word in the laſt edition of *Chambers's Cyclopædia.*

The ſame, by John Dalton, *of* Kendal.

The Caoutchouc, or elaſtic gum, is an artificial production, made by combining ſmoke with the juice of an unknown tree, a native of Spaniſh America, as alſo of India and China. The European chymiſts are yet unacquainted with the proceſs by which this combination is effected, as well as of the means uſed in forming it into bottles, the ſhape in which it is moſtly ſeen in Europe. Some account of it may be ſeen in ſome late Elements of Chymiſtry, written in French.

Query 2. *anſwered by Mr.* Alex. Rowe, *of* Reginnis.

Between the arbors of a ſhady grove,
The ſeat of pleaſure, or the ſcene of love;
Where gaudy ſongſters tune their matin lay,
And hail the riſing of the purple day.

The ſame by Mr. John Jackſon, *of* Hutton-Rudby *School.*

The place alluded to by this query, muſt be the ſituation of the eye; which either in the talleſt perſon ſeen here, is ſcarcely 3 ells, of 3 quarters each, from the earth; or, otherwiſe, is that ſituation in the heavens, where an eye being placed, can only view the diameter of this earth apparently 3 ells broad.

Query 3. *anſwered by Mr.* G. Dixon, *of* London.

The properties of fire are as yet but imperfectly known; yet we may reaſonably ſuppoſe that it cannot exiſt without air, and indeed requires a pretty ſtrong body of it for its ſupport. Now by the heat of the ſun the body of air is rarefied, and conſequently the force deſtroyed which it would otherwiſe have, did not the ſun ſhine upon it.

Mr. *John Dalton* ſays, The reaſon why the ſun, ſhining upon the fire, renders it ſo languid, ſeems to be owing to its rarefying the circumambient air. For it has been proved from a variety of experiments by Boyle and others, that combuſtible bodies burn with more or leſs vehemence, as the air they are in is condenſed or rarefied.

And Mr. *Jonathan Hornby,* of *Weſterdale,* ſays, The fire does not really go out, but only apparently ſo, on account of the ſun's rays being more luminous than thoſe of the fire.

QUERY

Query 4. *answered by Mr.* John Burrow, *of* Bolton Field.

Pledges were of very early date, as appears from *Exodus* xxii. 26. and *Deut.* xxiv. 10. 17. and several other places. The ancient pledge was a piece of silver, which was worn in the pocket. And as marriage was always held sacred, it was afterwards thought more prudent to have the pledge exposed more to view, by making it into a ring, and wearing it on the hand. And the fourth finger of the left hand was made choice of, because anatomists had discovered a vein which went from it to the heart; whence it might be truly said that the heart and hand were united.

The same, by Mr. Henry Lee, *of* Bingham.

The custom was introduced by the ancients, who used to present their mistresses with a ring, meaning thereby to express, as a ring has no end, so there should be no end of that love which is necessary to constitute connubial felicity. And it was put upon the fourth finger of the left hand, because anatomists affirm that there is a vein in it having a direct conveyance to the heart, which is the source of love and affection.

See other Solutions of the Queries, and a list of the Names, in the Supplement.

New Enigmas.

I. Enigma 697, *by* Eugenio.

My num'rous beauties to compose
    The elements combine;
And Art her friendly aid bestows,
    To make those beauties shine.

A thousand lovely hues I wear,
    A thousand shapes assume;
At court I decorate the fair,
    And aid their native bloom.

Yet not to courts alone confin'd,
    Or but in cities seen;

With rustic nymphs I favour find,
    With them I tread the green.

When I my novel charms unfold,
    By belles and beaus I'm priz'd:
And yet, how strange! if clad in gold,
    By misers am despis'd.

Thousands by me are daily fed,
    And all their wants supply'd;
Then let it not be falsely said,
    I only heighten pride.

II. Enigma 698. *by Mr.* W. W. Crowle.

What prying eyes look for with care,
    And range the woodlands thro',
There present, ye lovely fair,
    In mystic lines to you.

For you, 'tis known can, if you please,
    Resolve each deep design:
Nothing can puzzle you, or tease,
    Whose wits so brightly shine.

A neat rotunda I am seen,
    Built by no vulgar hand;
A palace fitting for a queen,
    As soon you'll understand.

In flow'ry meads, on hills, in vales,
    In lonely woods, in shade,
In leafy groves, in verdant dales,
    In fertile fields I'm made.

Upon the cliff I too am found,
    And in the ragged rocks; [ground,
'Mong fern, and ling, on barren
    In thickets, among flocks.

My maker, like the tim'rous hare,
    Unwilling to reveal,
With art and labour takes due care
    My being to conceal.

Of what I'm made I shall not say,
    That I'll not bring to view:
My maker dwells in me in May,
    In April makes me new.

But long ere now, I make no doubt,
    Your piercing eyes have seen
What here is hid, you've found it out,
    And robb'd both king and queen.

III. ENIGMA 699, by Mr. R. Dening of Chardstock.

A monster rare, ye ladies fair,
  Himself now introduces;
In hopes that you will quickly shew
  The world his name and uses.

Devouring wretch, all he can catch,
  He instantaneous seizes;
Has millions stout, I make no doubt,
  Torn in ten thousand pieces.

Greedy of prey, day after day,
  He runs with rapid motion;

Should you come near, his voice you'd
  Loud as the troubled ocean. [hear

But then take care; he'll never spare;
  He's wondrously ferocious:
When you come by an enemy,
  You cannot be too cautious.

Take one hint more, and then explore
  What here has been related;
This monster's food, right understood,
  Is ours transmigrated.

IV. ENIGMA 700, by Miss Amelia Harpur.

In country, city, court I'm found;
Where'er you go I do abound;
The fairest belles I oft embrace;
To me they owe each charm, each
    grace.
Tho' I've no elegance, nor sense,
These pleasing pow'rs I can dispense;
Yet this one truth I needs must say,
Folly as freely I display;
And oft those opposites I bear
In the same breath unto your ear.
When music does the heart controul,
And with her magic charms the soul,
I must direct th' enchanting strain,
Or not a note you can obtain.

As to my stature, shape, or face,
These 'tis impossible to trace;
But so susceptible's my make,
With ease I all impressions take.
My disposition you will find,
Is sometimes rough, at others kind;
Often with heat intense I glow,
And oft am cold as Alpine snow.
Mild as Cyprea's gentle doves,
And sportive as the rosy loves;
Sweet as the lily's fragrant breath,
Or noisome as the house of death.
Ladies these opposites compare,
And my true name will soon appear.

V. ENIGMA 701, by Mr. William Evans.

By yawning cliff, and craggy dell,
And circling hills I'm found to dwell;
By winding stream, and shady grove,
Where such as mourn, and such as love,
Retire to vent their bliss or care,
While I their joy or sorrow share.
But not to rural scenes alone,
In towns and palaces I'm known;
Hid in the monumental tombs,
Hovering round the lofty domes;
At Paul's I hum the pious lays,
At Drury clap the actor's praise;

And curious prying wights who mind
In many a lane and corner find me. [me,
And when contending martial powers,
Each on each their vengeance showers;
And murderous engines rending roar,
Shake the earth from shore to shore;
Then I to join the general cry,
Mount in air, and scale the sky;
Yet what I am, where'er I've been,
I never was or can be seen.—
'Tis now an easy task, ye fair,
This something—nothing to declare.

VI. ENIGMA 702, by Amintor.

In northern climes where winds tempestuous blow,
  And landscapes terminate with hills of snow,
    With stature far above my neighbours blest,
  I proudly rear'd my lofty tow'ring crest.

In

In time my greatnefs and my cloud-capt fame,
Is levell'd with the duft from whence I came ;
And now a monfter with his devious teeth,
In my torn heart fecures himfelf a fheath,
With rage rapacious gnaws my vitals through,
Though no advantage does to him accrue.
I'm then tranfported from my native land,
And on fair Albion's ifle next take my ftand ;
Here my inveterate foe my courfe purfues,
And with frefh malice former fpleen renews.
By tortures manifold my frame's disjoin'd,
My many parts to many fates confign'd ;
But one above the reft ftill undergoes
Torments immenfe ere it oblivion knows ;
Remorfelefs fteel betwixt each fibre glides,
And numerous particles from one divides ;
When feparated thus in bonds we're bound ;
Nor have our woes a termination found ;
The tortures which the holy fcripture faith
The wicked muft experience after death,
We next endure.—But hold, I've fpoke too plain,
Hence doubtlefs foon you will declare my name.

VII. Enigma 703, *by Mr.* Tho. Jackfon, *of* Belper.

She comes ! fhe comes ! the baleful murd'refs comes !
Her head adorn'd with hiffing fnaky plumes ;
Her down-caft eye darts forth an angry gleam ;
Her livid checks an inward woe proclaim :
Save when ill-fated genius feels her power ;
'Tis then, with joy, her murky heart runs o'er.
As late—when an affociated band
Their dread artillery put in Fungus' hand ;
Whilft unprepar'd, devoted to their fpite,
I felt her congregated poifon's bite.
She herds with ignorance ; yet her conftant play
Is to purfue where merit leads the way ;
Which when fecurenefs aids her coward power,
Is fure to feel th' affaffinating hour.
But if detected, and her labour loft,
Oh, with what fad convulfions is fhe tofs'd !
She pines, fhe writhes—and in a viperous rage,
With fubtle poifons doth herfelf engage ;
Unus'd to live, if worth fuperior rife,
She wounds her vitals, fhrinks from fight, and dies.
  Ye witty fair ! this demon's name reveal ;
  And never let your minds her pretence feel.

VIII. Enigma 704, *by Mr.* J. J. *of* Bungay School.

Peace to the woodlands, and the winding fhore.
No longer let the fhepherd tell his tale ;
Now let the vocal throng be heard no more,
Nor plowman whiftling in the lowly vale.

For lo, I come, with filence in my train,
With balmy reft to eafe the brow of care,
To lull to fleep the memory of pain,
While meditation leadeth up the rear.

Now to the crowded fcenes of gay delight,
Where pleafure fmiles amid her gaudy train,
I lead the fair, the Britifh fair fo bright,
Where gilded fafhion fpreads her wide domain.

I call fweet airy fancy from afar,
Who forms with varying hand the tranfient dream,
Then bid her mount her party-coloured car;
Enough—the fair will now perceive my name.

IX. ENIGMA 705, *by Mifs* Betty Smales.

When rofy morning bids the tuneful throng
From woods and valleys fwell the general fong,
And early nymphs and fhepherd fwains arife,
I leave the grov'ling world, and mount the fkies,
But ftrait's the gate, and narrow is the way
I pafs, to reach the blifsful realms of day:
My parent fmiles when I'm exalted high;
But when I leave her, fhe prepares to die:
Soon as I'm born I quit her foftering breaft,
And wandering feek in vain a place of reft.
But fhould I deviate from the narrow road,
I grieve the faint, and draw his foul from God.
I bring difordet'd looks, and broken fighs,
Prayers and curfes, frowns and weeping eyes.
Tho' all difdain my prefence to attend,
Yet kitchen Doll will own me for a friend;
There, an ufurper, I fupply the place
Of one that thinks his freedom no difgrace
In hoftile fields where thundering cannons roar,
And dying foldiers welter in their gore,
I rove amid the croud, a foe to breath,
And make more horrible the field of death.

X. ENIGMA 706, *by* Zythum.

Ye meddling tribe of bufy mortals, hufh!
For once prevent a maid the modeft blufh;
Withhold farcaftic jears, ye fneering fophs;
Guardians forbear your menaces and fcoffs:
While I my wifhes and my worth explain,
In hopes a faithful, loving, fpoufe to gain.—
No bonny lafs in health was e'er more gay;
No lark in fpring, no lambkin when at play;
Yet prudence guides my fteps; for I difdain
The fly ambition of the treacherous fwain,

What

What can't a female ? Honour is my view,
From censure free, unstain'd with folly too.
Can beauty please ? Can elegance of mein ?
Behold in me the charms of England's queen.
The lily and the rose adorn my face,
That virgin bloom, to chastity a grace.
In order rang'd my jetty ringlets flow,
And on my lips harmonious numbers glow.——
Great Newton is my friend; through him I scan
The works of nature, and the ways of man;
Explore the orbs; describe the motion given
To sun, to moon, and all the host of heaven.——
The various readings of the sacred page
Claim my attention, and my parts engage,
The cavils of the atheist to controul;
Confirm the good, and fix the wav'ring soul.——
Now for my favour'd choice should e'er I wed,
And take a partner to the bridal bed,
Sound sense must be his lot, his manners mild,
Old in strict virtue, but in vice a child ;
Polite and learned; not with pride o'ergrown ;
A tender heart congenial with my own.——
Some prudish nymphs, more coy than chaste, may blame
This honest freedom, and this virtuous flame :
But stop your censure, ranc'rous spleen abate,
First find the name of this my wish'd for mate;
A *rara avis* he, for when he dies,
Soon will another phœnix from his ashes rise.

See the rest of the new Enigmas in the Supplement.

New REBUSES, CHARADES, *and* QUERIES.

I. REBUS, *by Miss* Emily Rivers.

The fair who for love of Ulysses did sigh ;
The sad, solemn bird that in darkness does fly;
The musical man who in hell sought his bride ;
The name to the young of a goat that's apply'd.
Th' initials connect, and a hero you'll find,
In whom worth and valour most rare were combin'd.

II. REBUS, *by* W. H. Hall, *Esq; Barrister at Law.*

One seventh of a dame that we oft times invoke,
With the name of a beast that belongs to the yoke,
Produces a person in Britain well known,
Whose fame stands unrivalled, his enemies own.

III. REBUS, *by Mr.* Geo. Stevenson, *Master of the Boarding-School,*
West Boldon, Durham.

Suppose Aurora's offspring bright,
(Which in verdant meads you'll often find)
Appears reversed in your sight,
Ladies no doubt but in your mind,
You then will wish and hope to be,
What then before your eyes you see.

IV. REBUS, *by Mr.* William Boyer, *of* Leyland, *near* Preston.

To the beauteous dame for whom in days of yore,
So many Trojans fell in streaming gore;
Two-sevenths of her of whom the Spartans sing
Was daughter, wife, and mother to a king;
A river famous in the British land,
Two-thirds of it, and then you've at command
The name of one whom I so much revere,
And in my eyes is queen of all the fair.

V. REBUS, *by Mr.* S. Oxley.

To two-thirds of a bird of which poets have sung,
Add half of the place where she hatches her young.
To three sevenths of a vest, add a lion's retreat;
Then the first son of Judah the name will complete
Of a beautiful damsel who shines in the north,
For virtue far famed, and matchless in worth.

See the Charades *in the Supplement.*

————————

I. QUERY, *by* W. H. Hall, *Esq. Barrister at Law.*

Why is sound more distinct at night than in the day-time, though our
faculties and the doctrine of sounds do not change?

II. QUERY, *by Mr.* James Williams, *of* Colyton *School.*

Whence or how arises the sound commonly called the singing of the
tea-kettle?

III. QUERY, *by Mr.* Henry Lee, *of* Bingham.

Would it contribute to the happiness of the married state, were divorces
more easily to be obtained?

IV. QUERY, *by Mr.* J. Jackson, *of* Hutton-Rudby *School.*

It is no less remarkable than true, that in the splitting of marble blocks,
freestone, and even flinty rocks, cavities have been found, containing one
or more live toads in them, which on being exposed to the air, have soon
after died. Can any account be given, how these have been generated, or
how sustained, in such a situation?

V. QUERY,

V. QUERY, *by Mr.* W. Bearcroft, *of* Nawton.

What is the reason that commonly the air is colder about the time of sun-rise and sun-set, than it is either before or after?

VI. QUERY, *by Mr.* William Clark, *of* Wistow, *near* Selby, Yorkshire.

What system of philosophy gives us the most convincing and demonstrative proof of the immortality of man?

** *The Editor congratulates his numerous readers on having this year, at the frequent solicitation of many of his learned contributors, made room for a much greater number than usual of their very ingenious compositions, which it has always hitherto been with heart-felt reluctance that he was obliged to suppress for want of room. This desirable end he has attained by the publication of a* Supplement to the Ladies' Diary *this year, price 6 pence, (to be had separately of the same persons who sell the Diary itself), containing an alphabetical list of all the Enigmas that have been printed since the commencement of the Diary in the year* 1704, *with a great variety of the original compositions of our correspondents. And this Supplement being intended as an experiment this year, it is hoped that all true friends of the Diary will promote the sale and knowledge of it as much as in their power, that the Editor may judge how far it is agreeable to his readers to continue so great an improvement of the Diary in future years.*

There will be eight prizes, to be determined by lot as usual, viz. two of 8 Diaries and Supplements for the Solution of the Prize Enigma, *two of 8 Di. and Sup. for the general* Solution of the Enigmas; *two of 6 Di. and Sup. for the Solution of the* Reuses, Queries, &c. *also one of 10 and one of 8 Diaries for the Solution of the* Prize Question.—*All our correspondents letters must be sent before the 1st of May, and the separate Solutions of the Prize Enigma and Prize Question before Candlemas Day, and all franked or post paid, or they will not be received, many having being rejected last year on that account.—They are also still requested to make their compositions as brief as they can; and must observe to send Solutions with every thing new that they propose.*

In answer to several who enquire for the early Diaries, it is observed that the republication of the whole till the year 1773 *inclusive, in 5 vols. by Dr. Hutton, may be had at* Robinson's *or* Baldwin's, *in Paternoster Row, viz. the Poetry in 2 vols. and the Mathematics in 3 vols. also his Mathematical Miscellany in 1 vol.*

ANSWERS

ANSWERS to the MATHEMATICAL QUESTIONS.

I QUESTION 863 anfwered by Mr Tho Woolfton, of Adderbury.

FROM the second equation take twice the firft, and we have $z = 13 + x$; and from three times the 1ft equation take the 2d, and we have $y = 7 - 2x$: fubftitute thefe values of y and z in the 3d eq. and we have $x^2 - \frac{1}{2}x = 8$: whence we find $x = 3$; and confeq. $y = 1$, and $z = 16$; therefore the word is CAP.

> Let this ornament, ye fair,
> Still adorn your flowing hair;
> Lay no decent forms afide,
> Modefty fhould be your pride.

The fame by Mr Geo Roope, of Tring Academy.

By taking the 1ft equation, and the double of it, from the 2d, we get $y = 33 - 2z$, and $x = z - 13$; thefe fubftituted in the 3d equ. give $158z - 6z^2 = 992$. Hence $z = 16$, $x = 3$, and $y = 1$; and the ornament is a CAP.

The fame by Mr Ja Scholefield, Schoolmafter at Brumley.

From the 2d equation take double the 1ft, and $z = x + 13$; take this from the firft, and $y = 7 - 2x$; place thefe values of z and y in the 3d equation, which then becomes $6x^2 - 2x = 48$; hence $x = 3$, $y = 1$, $z = 16$, and the anfwer a CAP, an ornament becoming all modeft women.

Various other ingenious anfwers were given by Meffrs Jas Adams, Allenfis, Amicus, Rd Ball, Rob Barwick, Mrs Eliz Baufor, Wm Bearcroft, Geo Befwick, John Birch, John Boden, R Bretherick, John Brownrigg, Wm P Burman, John Burrow, W C, John Cansfield, John Cavill, Geo Clayton, S Clement, Tho Cock, John Cooper. Jos Cwing, Rob Crofier, John Cullyer, Jas Cunliffe, John Dalton, Rd Dening, G Dixon, Edw Emes, Rev L Evans, Evoc Egroeg Semaj, M Fleck, Tho Gell, J Griffith, Henry Holme, Jonathan Hornby, J Hunt, Jno Jackfon, Wm King. Tho Mafon, Jas Mccalfe, Wm Mudge, Jos Nendick, Geo Robarts, Chr Robinfon, Alex Rowe, Ifaac Saul, Joe Sherwin, Tim Simpfon, Jno Smith, Geo Stevenfon, Jno Surtees, Hen Taylor, Jno Howard, Matt Terry, Mifs Janetta Todd, Jno Unwin, J Walton, Rd Waugh, Wm White, Abel Whitehoufe, Jas Williams, Jas Wood, B Worfhip, Jos Yeule, and Jas Young.

II QUESTION 864 anfwered by Mr R Bretherick, of Kirkby-Overblow.

Thofe who would fee this problem refolved in a general manner, for all polygons, may, I prefume, have their curiofity abundantly fatisfied by perufing the Scholium at pa. 81 of Dr Hutton's elegant Treatife on Menfuration. But for the fake of thofe who are not in poffeffion of that book, I have copied one of the methods there laid down,

C

Suppose A B C to be one of the triangles which constitute any regular polygon: Then, ' as radius $= 1$: tang. $\angle$ C A P $= t$ ∷ A P : P C $= t \times$ A P $= \frac{1}{2} t$, supposing A B $= 1$; then $\frac{1}{4} t$ ($=$ A P $\times$ P C) $=$ the $\triangle$ A C B, and $\frac{1}{4} n t =$ the polygon; where n is the number of sides. So that, by finding the tangent of the $\angle$ C A P, by the table of tangents, and multiplying it by the number of sides, $\frac{1}{4}$ of the product will be the multiplier required. Hence we obtain $9 \cdot 365640$ the multiplier for the undecagon, and $11 \cdot 196152$ for the duodecagon.
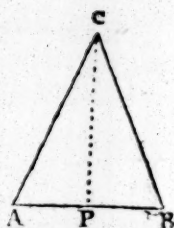
The same by Mr John Dalton, Teacher of the Mathematics, Kendal.

In the example for finding the multiplier for a dodecagon, Hawney seems to have fallen into several mistakes. After finding the perpendicular on one of the sides, he multiplies it by $\cdot 5$ or $\frac{1}{2}$, half the base or side of the decagon, which would give the area of one triangle, or $\frac{1}{12}$ of the whole; but by misplacing the decimal point, he in effect multiplies the said area by 10, and concludes he has found the whole area of the dodecagon, when he has only $\frac{10}{12}$ or $\frac{5}{6}$ of it. In like manner he has mistaken $\frac{10}{11}$ of the area of the endecagon for the whole area.

In one or other of these ways is the answer also given by Messrs Jas Adams, Allensis, Amicus, Jno Aspland, Rd Ball, Rob Barwick, Mrs Eliz Bausor, Wm Bearcroft, Jno Birch, Jno Boden, Jno Brownrigg, Jno Burrow, W C, Jno Cansfield, Jno Cavil, Tho Cock, John Cooper, Jos Cowing, Jno Cullyer, Jas Cunliffe, Rd Dening, G Dixon, Rev L Evans, M Fleck, J Griffith, Henry Holme, Jonathan Hornby, Jno Howard, Jno Jackson, Wm King, Jno Lowry, Jas Metcalfe, Wm Mudge, Geo Robarts, Chr Robinson, Geo Roope, Alex Rowe, Isaac Saul, Jas Scholefield, Tim Simpson, Jno Smith, Geo Stevenson, Jno Surtees, Henry Taylor, Matt Terry, Miss Janetta Todd, J Walton, Rd Waugh, Wm White, Jas Williams, Tho Woolston, Jos Youle, and Jas Young.

III Question 865 answered by Mr M Fleck.

Since the triangle is right-angled, the hypothenuse $2b$ must be the diameter of the circumscribing circle, which is given; then if $2s$ be the sum, and $2d$ the difference of the legs, the radius of the inscribed circle will be $= s - b$. Then since the given distance g is the hypothenuse, and d and $s - b$ the legs of another right-angled triangle, we have $g^2 = d^2 + \overline{s - b}^2 = 3 b^2 - 2 s b$; hence $s = \dfrac{3 b^2 - g^2}{2 b}$, and $d = \sqrt{2 b^2 - s^2}$. Which being now known, then $s + d =$ the greater leg, and $s - d =$ the less.

The ſame anſwered by Mr S Clement, Schoolmaſter, Arundel.

Put A D or D C $= a$, D E $= b$, H E $= y$, and D H $= z$; then will A B $= a + y + z$, and B C $= a + y - z$. Now by right-angled triangles $y^2 + z^2 = b^2$, and $\overline{a + y + z}^2 + \overline{a + y - z}^2 = 4a^2$; therefore $2ay + b^2 = a^2$, and $y = \dfrac{a^2 - b^2}{2a} \left\{ \begin{array}{l} \text{the leſs radius. Then } z = \\ \sqrt{b^2 - y^2} \text{ becomes known,} \end{array} \right.$ and conſequently the legs $a + y + z$ and $a + y - z$.
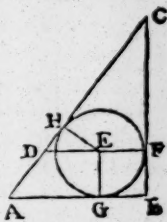
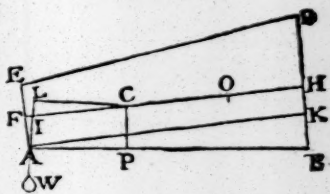*Mr Jno Burrow, of Bolton Field, conſtructs the Prob. thus:*

With the given radius A D deſcribe the ſemi-circle A C B; and with the ſame center and given diſtance of the centers draw the other ſemicircle G E F; draw A E H to touch G E F, and make the angle H A C $=$ H A B; laſtly join B C, and A B C is the triangle required; as is evident.
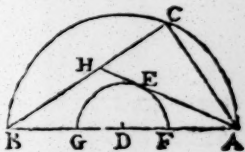
Ingenious ſolutions were alſo given by Meſſrs Adams, Amicus, Aſpland, Allenſis, Ball, Birch, Boden, Bretherick, Canſfield, Cavill, Clayton, Cock, Cowing, Cullyer, Cunliffe, Dalton, Evans, Griffith, Hornby, Howard, Jackſon, King, Mudge, Robarts, Roope, Rowe, Saul, Schole-field, Smith, Stevenſon, Surtees, Taylor, Terry, T Todd, Waugh, White, Williams, Woolſion, Youle, and Young.

IV QUESTION 866 anſwered by Amicus.

The lever A E D B and weight w will reſt in any poſition, provided their common center of gravity be ſupported; and becauſe it can then only be ſupported by the prop, when the lower ſide A B of the lever is horizontal; if P be the prop, and P C perp. to A B meet the axis F H of the lever in C, draw W A E parallel to C P cutting the axis in I, and C L parallel to A B in L; then I may be conſidered as the place of the weight, C the common center of gravity of the weight and fruſtum, and O the center of gravity of the fruſtum. By the queſt. A E $= b = 3$, B D $= 6$, A P $=$ L C $= 3$, F H $=$ A K $= 30 = a$, B K $= \frac{3}{2}$, and A K : B K :: 1 : ·05 :: 2 : $n =$ ·1, or 2 B K $= na = 3$, A B $= \frac{1}{2}\sqrt{3609}$, A K : A B :: C L : C I $= 3·003747 = e$, I L $= 2$ I F $= \frac{1}{20}$ C L, F I $= \frac{3}{40} = ·075$, and F C $= 3·078747 = g$. Now in order that C may be the common center of gravity of the weight and fruſtum, it is manifeſtly neceſſary that $ew = \overline{\text{F O} - g} \times$ ſolidity or weight of the fruſtum $= \overline{\text{F O} - g} \times$ $\frac{1}{3}n^2a^3 + b^2a + nba^2 = \frac{1}{2}b^2a^2 + \frac{2}{3}na^3b + \frac{1}{4}n^2a^4 - \frac{1}{3}n^2a^3g - b^2ag$ $- nba^2g = \frac{1}{12}b^2a \times \overline{17a - 28g}$, or $w = 3174·495$ cubic inches of oak $= 91·8538$ lb. Averdupois.

C 2

The same by Mr John Dalton, Teacher of the Mathematics, Kendal.

The weights of the parts of the frustum on each side of the prop will be thus, the greater $= 17\cdot367$ lb, the less $= 0\cdot862$ lb. And from the directions of the writers on fluxions, the distance of the fulcrum from the center of gravity of the greater part is $16\cdot0415$ inches, and from that of the less part $1\cdot4524$ inches; which distances, multiplied by the respective weights, give the momenta of the two parts, the difference of which is the momentum of the required weight, which divided by 3, its distance from the fulcrum, gives the weight $= 92\cdot446$ lb.

The same by Mr John Aspland, of Soham.

GI : GH :: EF $-$ AB : DC $-$ AB $= \cdot3$. Put EF $= a = 6$, DC $= b = 3\cdot3$, HI $= b = 27$; $\left\{ \dfrac{3a^2 + 2ab + b^2}{a^2 + ab + b^2} \right\} \times \frac{1}{4} b = 16\cdot041375$ then will be the distance of the center of gravity of DE from the point H. Again, put AB $= c = 3$, and GH $= l = 3$; then will $\left\{ \dfrac{3c^2 + 2cb + b^2}{c^2 + cb + b} \right\} \times \frac{1}{4} l = 1\cdot4523$ be the distance of the center of gravity of DB from the point H. Now the solidity of the part DE is $600\cdot21$ inc. and its weight $17\cdot367$ lb; and the solidity of DB is $29\cdot79$ inc. and its weight $\cdot86197$ lb. Put now $d = 16\cdot04137$, $r = 1\cdot4523$, $w = 17\cdot367$, and $w = \cdot8197$, also $x =$ the weight sought; then $rw + lx = dw$, and hence $x = \overline{dw - rw} \div l = 92\cdot447$ lb, the answer.

Ingenious answers were also given by Messrs Adams, Allensis, Ball, Birch, Boden, Bretherick, Burrow, Canfield, Cullyer, Gunliffe, Emes, Evans, Hornby, Howard, Jackson, King, Lowry, Mudge, Rowe, Saul, Scholefield, Surtees, Taylor, Terry, T Todd, Waugh, White, Whitehouse, Williams, Woolfton, and Young.

V QUESTION 867 answered by Mr Matt Terry, Land Surveyor.

Since the steelyard accurately weighs 60 cwt or 6720 lb when 243 lb is suspended on the 29th division, theref. $6720 : 243 :: 29 : 1\frac{109}{2240} = d$ the length of the short arm of the steelyard; and $d : 1 :: 118 : 112\cdot5245$, instead of 112. Again, $d : 1 :: 243 : 231\cdot7242$ lb, instead of 2 cwt or 224 lb. Hence, in weighing with the small weight, or 118 lb, the error on the first division is $\cdot5245$, on the 2d twice as much, on the 3d thrice as much, and so on to the 29th division, where the error is $15\cdot21$ lb. And, in weighing with the greater weight, or 243 lb, from the 29th to the 59th division, the error on the 30th division is $7\cdot7242$ lb, on the 31st twice as much, on the 32d thrice as much, and so on to the last or 59th division, where the error is 30 times $7\cdot7242$, or $231\cdot7261$ lb, or 2 cwt 7 lb.

This queſtion was anſwered nearly in the ſame manner by Meſſrs Adams, Allenſis, Amicus, Aſpland, Ball, Birch, Boden, Bretherick, Burrow, Cavill, Cullyer, Dalton, Evans, Griffith, Howard, Jackſon, Mudge, Rowe, Saul, Scholefie'd, Smith, Stevenſon, Surtees, Taylor, Waugh, White, Whitehouſe, Williams, Woolſton, and Young.

VI Question 868 *anſwered.*

There are two ways of confidering this problem, viz. either as the ſemiparabola is a right one, or an oblique one. According to the common acceptation, it is taken as, and uſually underſtood to be, a right parabola. But ſome of our correſpondents have taken it as oblique, which makes the concluſion different, though each ſolution be right in its own way. We ſhall inſert an example or two of each.

1. *For the Oblique Parabola, by Amicus.*

Circumſcribe the given circle with an equilateral triangle F G H, touching it in A, B, C; biſect A F in T, and to F H apply T D = A T = T F; join A D, and draw T E parallel to F H cutting A D in E; biſect T E in v; then with the vertex v, axis v E, and ordinate rightly applied A D, deſcribe a parabola D V A L cutting G H in L, ſo is D A L H D the ſemiparabola required.
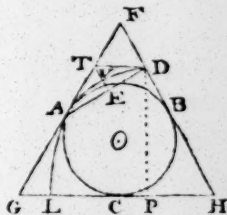
For ſince T V = V E, T A and T D are tangents to the parabola; and ſince T D = T F = F D, T D is parallel to G H; conſeq. the ordinate E R is parallel to the tangent T D, and the abſciſſa D H to the axis v E; wherefore H D A L is a ſemiparabola; and becauſe the tangent G F is biſected in A, it is manifeſtly that required.

By ſim. triangles, as B H : D H :: 2 : 3 :: B O : A D = $\frac{3}{2}$ B O = $\frac{1}{2}$ B H $\sqrt{3}$, or B H = B F = B O $\sqrt{3}$ = A B; and D B : D H :: A B² : L H², or L H = 3 B O; and D P (perp. to G H) = $\frac{3}{4}$ F C = $\frac{9}{4}$ B O; and the area of the ſemiparabola = $\frac{9}{2}$ B O².

2. *For the Oblique Parabola, by Mr T Todd, of Darlington.*

It is proved in art. 20 Simpſon's Flux. that the equilateral triangle G B A is the leaſt that can circumſcribe the given circle D E P, where B A, perp. to the radius O E = r, is a tangent to both curves in the point E; P E parallel to G A; and B D perp. to G A. Then O B = 2r, and G B = 2r $\sqrt{3}$. Alſo ſince B E = E A, and, by the parabola P V = V B = $\frac{1}{4}$ G B, it appears by Simpſon's Geom. p. 201, that the required ſemiparabola G V E F is now given, being the greateſt that can be inſcribed in the ſaid triangle, and the leaſt that can circumſcribe the given circle;
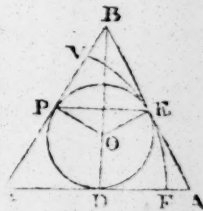
hence then $\lor$ P : V G : : 1 : 3 : : P E^2 : G F^2 = $9r^2$, or G F = $3r$ = B D, and the area of the semiparabola G V E F is $\frac{2}{3}$ G V $\times$ G F $\times$ fine $\angle$ G =

$$\frac{\sqrt{3}}{2} \times \frac{2}{3} \times \frac{3\sqrt{3}}{2} r \times 3r = \frac{9}{2} r^2 \text{ required.}$$

### 3. For the Right Parabola, by Mr Isaac Saul, Holland near Wigan.

By theor. 8 Simp. Max. and Min. the least right-angled triangle circumscribing the circle, is when the legs B C, B A are equal. Also the greatest parallelogram that can be inscribed in any curve is when the sub-tangent C D = D E = $\frac{1}{2}$ C B. Theref. circum. the given circle with the right-angled triangle A B C, making A B = B C; bisect B C in D, and D C in F; then to the vertex F, axis F D, and ordinate D E, describe the parabola F E G required. Then, putting a for the radius of the circle, B E = $a + a\sqrt{2}$, and B C = $a\sqrt{6 + 4\sqrt{2}}$ = $2a + a\sqrt{2}$1, and B F = $\frac{3}{4}$ B C, and D E = 2 D F = $\frac{1}{2}$ B C; hence F D : F B : : D E^2 : B G^2, or 1 : 3 : : $\frac{1}{4}$ B C^2 : B G^2 = $\frac{2}{4}$ B C^2, and B G = $\frac{1}{2}$ B C$\sqrt{3}$. Conseq. the area of the semiparabola, or $\frac{2}{3}$ B F $\times$ B G, is $\frac{2}{3} \times \frac{3}{4}$ B C $\times \frac{1}{2}$ B C$\sqrt{3}$ = $\frac{1}{4}$ B C^2 $\sqrt{3}$ = $a^2 \times \frac{3}{2}\sqrt{3} + \sqrt{6}$ = $5.047 a^2$, as required.
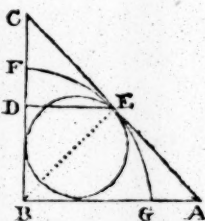
Solutions were also given by Messrs Bretherick, Cunliffe, Dalton, Evans, Hornby, Howard, Jackson, Mudge, Rowe, Sanderson, Taylor, Waugh, White, Williams, and Young.

VII Question 869 answered by Mr John Howard, Teacher of the Mathematics, Carlisle.

Let z be the zenith, P the pole, and o the sun's place; then we have given z P = 40° the co-latitude, also z o being the co-altitude, and P o the co-declin. the altitude is 90 — z o, and the declin. P o — 90, the sum of which is P o — z o = 34° 40′ = P D, by taking o D = o z. Then in the triangle z D P, are given P z, P D, and $\angle$ P = 30°, to find the side D z and $\angle$ P D z, the supplement of which is the $\angle$ o D z = $\angle$ o z D. Then in the isosceles triangle o z D are given the base z D, and the angles at the base, to find o z or o D = 67° 31′ the co-altitude; conseq. P o = P D + D o = 102° 11′, and then P o — 90 = 12° 11′ the declination south, answering to October 25th.
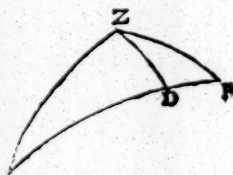
The same by Mr Rd Waugh, Bushblades, Durham.

Let a and b = fine and cofine of 50°, c and d the fine and cofine of 34° 40′, m = cofine of 30° the $\angle$ P, and x and y the fine and cofine of the declination. Then $cy — dx$ = cos. z o; and, by a well-known

theorem in ſpherics, bmy $\{$ $\dfrac{x}{y}$ $=$ $\dfrac{c-bm}{d-a}$ $\}$ $=$ tang. of $12^\circ\ 8'$ the de-
$-ax=cy-dx$; hence clination, anſwering to the
25th of October. Alſo the altitude $= 22^\circ\ 32'$.

Solutions were alſo given by Meſſrs Adams, Amicus, Aſpland, Clement, Cock, Cullyer, Dalton, Evans, Hornby, Jackſon, Mudge, Rowe, Taylor, White, Williams, and Young.

VIII Queſtion 870 *anſwered by the Rev L Evans, of Hungerford.*

The times in which pendulums make an equal number of vibrations being as the roots of their lengths, we have $\sqrt{39\frac{1}{3}} : \sqrt{12} :: 20 : 11\cdot06$ the time in which a pendulum of 12 inches makes 20 vibrations. Now let $x =$ depth of the well, $a = 16\frac{1}{12}$ feet the ſpace through which a heavy body falls in the firſt ſecond of time, $b = 1142$ feet the ſpace through which ſound paſſes in the ſame time, $c = 11''\cdot06$ the time given from the firſt deſcent of the ſtone to the hearing of the ſound. Then by the law of fall- $\{$ $\dfrac{x}{a}$, theref. $\sqrt{\dfrac{x}{a}}$ $\}$ $=$ the time of the ſtone's ing bodies $a : x :: 1^2 :$ deſcent; and $b : x :: 1'' :$
$\dfrac{x}{b}$ $\{$ $=$ time of the ſound's aſcent; wherefore $\}$ $\dfrac{x}{b} + \sqrt{\dfrac{x}{a}} = c$; and hence $x =$
$$\dfrac{b^2 + 2abc - b\sqrt{b^2 + 4abc}}{2a} = 1521\cdot341 \text{ feet, the depth.}$$

It was alſo ingeniouſly anſwered by Meſſrs Adams, Allenſis, Amicus, Aſpland, Ball, Mrs Bauſor, Birch, Boden, Eretherick, Furman, Burrow, W C, Canfield, Cavill Clement, Cock, Cooper, Cowing, Cullyer, Dalton, Dening, Dixon, Hornby, Howard, Jackſon, King, Lowry, Maſon, Mudge, Roofe, Rowe, Saul, Scholefield, Smith, Stevenſon, Surtees, Taylor, Terry, Todd, Waugh, White, Whitehouſe, Williams, Wood, Youle, and Young.

IX Queſtion 871 *anſwered by Amicus.*

If three tangents be drawn to the ſame given circle, their interſections will form a triangle, and if the interſection fartheſt from the centre be called the vertical angle, the tangent between it and the point of contact will be equal to half the perimeter of the triangle, if the triangle *does* not circumſcribe the circle; and to half the diff. between the ſum of the ſides and baſe if *it does.* Which property holds equally in ſpherical triangles as in plane ones, and is too evident to need a particular demonſtration here. This premiſed,

Let the great circles P A, P B, forming the given vertical angle at P, be drawn, ſo that A P $=$ B P $=$ half the given perimeter, and the leſs circle A T B touching them in A and B; and round the pole P at a given diſtance therefrom $=$ the given perp. of the triangle, draw the repreſentation of another leſſer circle; then the repreſentation of a great

circle c D being drawn to touch those of the two lesser ones, will, from what is premised, form the representation c P D of the triangle required. Now the distances of the poles of the great circle c T t D from each of the points of contact T and t must $=$ 90° or a quadrant, the distance then from P $=$ a *quadr.* — P t, and from o the pole of the other lesser circle $=$ a *quadr.* $+$ T o; whence, by common spherical geometry, the representation of this pole, and consequently of the great circle c T t D, are readily drawn. And that whether the projection be stereographic or orthographic.

The same by Mr Isaac Dalby.

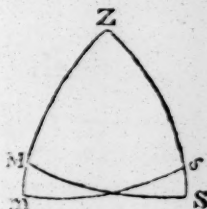*Lemma.* If two great circles touch a lesser circle, the segments of the great circles between the points of contact and points of intersection on the same side of the lesser circle are equal. This is too evident to need a demonstration.

Projection. Make the $\angle$ D N C $=$ the given vertical angle; take N C, N D each $=$ ½ the perim. describe the arcs C P, D P perp. to N C, N D; about P as a pole describe a lesser circle at the dist.

of P D or P C, which, it is evident, will touch N D, N C in D and C; also about N as a pole describe a lesser circle A R B at a distance $=$ the given perp. and describe the great circles S W, E L F parallel to the lesser circles A R B, D T C respectively; then by prob. 21 Emerson's Stereog. Proj. describe a great circle G I O L to cut the great circle S W so that the $\angle$ L I W $=$ comp. of N B or N A to 90°, and the great circle E L F so that the $\angle$ G L E $=$ comp. of P D or P C to 90°; and G N O will be the triangle required. For it is well known, that if a great circle be described to touch two lesser ones, it will cut their parallel great circles in angles $=$ the complements of the lesser circles distances from their poles, therefore the great circle G I O L will touch the lesser circles in T and R; hence by the foregoing lemma, the arc T G $=$ G D, and T O $=$ O C, therefore G T $+$ T O $+$ G N $+$ N O $=$ N D $+$ N C $=$ the perim. and describing the arc N R to the point of contact R, it will be perp. to the base G O, and $=$ the given perp. by construction.

Mr John Howard and Mr Wm White also answered this question.

X QUESTION 872 ans. by Mr Jas Young, of Pruddoe.

The figure being drawn as per question, &c. and L G H K a tang. to the curves at H; put the radius C A or C M $=$ r, the ordinate H E $=$ C O $=$ y; then is C E $=$ O H $=$ $\sqrt{2ry - y^2}$; A O : A C :: O C : C L $=$ $\frac{ay}{a-y}$; O L : C L :: O H : C G $=$ $\frac{CL \cdot CE}{OL}$; hence G E $=$ C E $-$ C G $=$ $\frac{CO \cdot CE}{OL}$ $\left\{ = E F \text{ when the parabola is a maximum} \right.$

by Simp. Max. and Min. hence $\left\{ \dfrac{CO \cdot CE}{OL} = CE \times \dfrac{2CO + CL}{CO + CL} \right.$ = GF = CE + EF = CE +

$\dfrac{3ry - 2y^2}{\sqrt{2ry - y^2}}$; and $FI^2 = CM^2 - CF^2 = r^2 - \dfrac{3ry - 2y^2}{\sqrt{2ry - y^2}}$. But, by

the nature of the parabola, $DE = DG = \frac{1}{2}EF = \frac{1}{3}DF$ from above,

therefore $1 : 3 :: EH^2 : FI^2 \left\{ \dfrac{3ry - 2y^2}{\sqrt{2ry - y^2}} \right\}$ which equation reduced $= 3y^2$. Confeq. $3y^2 = r^2 -$ gives $y^3 - 6ry^2 + 1Cr^2y$

$- 2r^3 = 0$; the root of which is $y = \cdot 2307c8r = HE$. Hence $IN =$ $2y\sqrt{3} = \cdot 799 \colon 1r$ the bafe of the para- bola, and its abfcifs $DF = \frac{3}{2}GE = \frac{3}{2} \times \left\{ \sqrt{\dfrac{ry - y^2}{2ry - y^2}} \right.$ is $= \cdot 416693r$.

Solutions were alfo given by Meffrs Amicus, Fretherick, Cock, Dalton, Gooch, Hornby, Howard, Mudge, Rowe, Todd, White, and Williams.

XI Question 873 *anf. by Mr Geo Sanderfon, of London.*

Let M and s reprefent the true places of the moon and ftar or fun, and m and s the apparent places of the fame; alfo z the zenith of the place. Put $A =$ fine of the half fum, and $R =$ fine the half remainder, in rule 1 laft Diary; $x =$ fine of half the true diftance MS; $d =$ fine of half the diff. of the true zenith diftances zM, zs; and $v =$ verf. $\angle z$.

Then $v = \dfrac{A \times a}{\text{fin } zm \times \text{fin } zs} = \dfrac{\overline{\text{fin } x + d} \times \overline{\text{fin } x - d}}{\text{fin } zM \times \text{fin } zs} \left\{ \right.$ by Sim. Trig. prop. 27 cor. 1.

Therefore $\dfrac{A \times a \times \text{fin } zM \times \text{fin } zs}{\text{fin } zm \times \text{fin } zs} = \overline{x + d} \times \overline{x - d} = x^2 - d^2$.

Put $N =$ half fum log. fines of the factors in the numerator added to the arith. comp. log. fines of the factors in the denominator, from which fubtract the log. of d; $\left\{ \sqrt{\dfrac{x^2}{d^2} - 1} \right\} =$ log. tang. of an $\left\{ \dfrac{x}{d} \right\}$ to rad. 1, then $N - d =$ log. arc whofe fecant is the log. fine

of which is $\left\{ \sqrt{\dfrac{x^2 - d^2}{x^2}}, \right\}$ which put $= l$; then $N - l =$ log. the log. of then $\left\{ \sqrt{\dfrac{\sqrt{x^2 - d^2}}{x^2 - d^2}} \right.$

$= $ log. of x, or log. fine of half the true diftance, as was to be inveftigated.

Ingenious demonftrations were alfo given by Meffrs Amicus, Dalton, and White.

XII Question 874 *anfwered by Mr Abel Whitehoufe, Wolverhampton.*

Take the fluxion of the given equation, making $\dot{y}$ conftant, and by reduction it is $2a\dot{x} = y\dot{y}$; the fluents of which give $4ax = y^2$; an equation to the parabola, the parameter being $4a$.

Much in the same manner is the solution given by Messrs Amicus, Aspland, Cunliffe, Dalton, Gould, Howard, Mudge, Rowe, Surtees, Terril, Todd, and White.

XIII QUESTION 875 *answered by Mr John Dalton, Kendal.*

If a falling body move with a uniform velocity, it must necessarily meet with a resistance, in the medium it is moving in, equal to its weight. Now it has been proved (Emerson's Mechan. prop. 108 cor. 3) that the resistance to a cylinder, moving in a fluid in the direction of its axis, is equal to the weight of a cylinder of that fluid, of the same base, and its length equal to the height a body falls in vacuo to acquire its velocity. Put now $g = 32\frac{1}{6}$ feet, $v = 10$ the velocity, then $g^2 : \left\{\frac{v^2}{2g}\right\}$ the altitude fallen to acquire the given velocity v, which $v^2 :: \frac{1}{2}g : \left\{\frac{v^2}{2g}\right\}$ altitude call a; put also $p = \cdot 7854$, $b = \cdot 075$ lb the weight of a cubic foot of air, $m = 200$ lb the man's weight, also $x =$ the diameter of the parachute. Then $50^2 : x^2 :: 150 : \frac{3}{50}x^2$ the weight of the same, which added to 200 or m, must be equal to the resistance, namely $abpx^2$, that is $\frac{3}{50}x^2 + m = abpx^2$; and hence $x =$

$$\sqrt{\frac{m}{abp - \frac{3}{50}}} = \sqrt{\frac{m}{\frac{bp^2}{2g} - \frac{3}{50}}} = \sqrt{\frac{10000}{\frac{375p}{2g} - 3}} = 100\sqrt{\frac{2g}{375p - 6g}}$$

$= 80\frac{5}{8}$ feet nearly, the diameter sought.

Answers to this question were also given by Messrs Amicus, Aspland, Howard, Mudge, and Rowe.

XIV QUESTION 876 *answered by Mr John Farey, London.*

Let A B C be the three given points; join A B, which bisect in E, and draw E C, parallel to which draw K B, A L; also through E draw K I perp. to E C. Let P be a point in the curve, and join A P, B P, C P; also draw P L perp. to A L meeting E C in G.

Put E C $= m$, K B $=$ A I $= n$, K E $=$ F I $=$ G L $= r$, the abscissa E G $= z$, and ordinate P G $= v$. Then $\overline{n + z}^2$ $+ \overline{v + r}^2 = $ A P^2, $\overline{n - z}^2 + \overline{v - r}^2 =$ B P^2, and $\overline{m - z}^2 + v^2 =$ C P^2. Hence by the question A P $\times$ B P $=$ C P^2, or $\sqrt{\overline{n + z}^2 + \overline{v + r}^2} \times \sqrt{\overline{n - z}^2 + \overline{v - r}^2}$ $= \overline{m - z}^2 + v^2$.
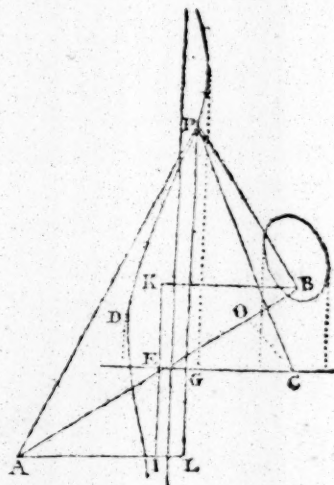
To reduce this equation to the $\left\{\frac{m^2 + r^2 - n^2}{2m}\right\}$, and $v = y + \frac{rn}{m}$; Newtonian form, make $z = x +$

then, after proper reduction, $xy^2 +$
$$\left\{ \frac{rn^3 - r3n - m^2rn}{m^2} \right\} \times y = -x^3 + \frac{2n^2 - 2r^2}{m}$$
$$\times x^2 + \frac{2m^2n^2 - 2m^2r^2 - m^4 - 5r^4 - 5n^4 + 14r^2n^2}{4m^2} \times x +$$
$$\frac{m^4n^2 - m^4r^2 - 2m^2n^4 - 2m^2r^4 + 4m^2n^2r^2 - 7n^4r^2 + 7n^2r^4 + n^6 - r^5}{4m^3};$$

which equation reduced gives $y = \left\{ \dfrac{m^2nr + n^2r^2 - n^3r \pm \sqrt{c}}{2m^2x} \right\}$, where c is the biquadratic equation under the vinculum. When $c = 0$, the four roots or values of x are
$$\frac{-r^2}{m}, \quad \frac{n^2 - r^2 \pm m\sqrt{2n^2 - m^2 - 2r^2}}{2m}, \quad \text{and} \quad \frac{n^2}{m}. \quad \left\{ \begin{array}{l} \text{From which} \\ \text{it is evident} \end{array} \right.$$
that if $\frac{1}{2}m^2 + r^2$ be leſs than n^2, the curve will be Sir I. Newton's 33d ſpecies, as in the figure; if $\frac{1}{2}m^2 + r^2 = n^2$, it will be the 34th ſpecies; and if $\frac{1}{2}m^2 + r^2$ be greater than n^2, it will be the 37th ſpecies. Alſo if $r = n$, it will be the 38th ſpecies; if $n^2 = m^2 + r^2$, it will be the 40th ſpecies; and laſtly if $n = 0$, it will be the 45th ſpecies.

Corol. When $r = 0$, (or the three points are in the ſame right line, as in queſt. 696), and if m^2 be leſs than $2n^2$, the curve will be the 39th ſpecies; if $m^2 = 2n^2$, it will be the 41ſt ſpecies; if $m = n$, it will be a right line with a conjugate point; if m^2 be greater than $2n^2$, it will be the 45th ſpecies; and laſtly if $m = 0$, it becomes the conic equilateral hyperbola.

Mr George Sanderſon, after giving the ſolution nearly as above, makes the following obſervations:

If D be the centre of a circle paſſing through the given points, and c o perp. to A B (c being always conſidered as the point from which the mean proportional is drawn); then if c o be leſs than a third proportional to 2 A D and E B, the curve will be Newton's 33d ſpecies; if c o be equal to the 3d proportional, it will be the 34th ſpecies; and if c o be greater than the ſame, it will be the 37th ſpecies. If c o $=$ E O, it will be the 38th ſpecies; and if E O $=$ 0, or A C $=$ C B, the 45th ſpecies; the aſymptote being parallel to A B, and its diſtance from E equal to A D.

If c o $=$ o, or the three points in the ſame right line (A B), the aſymptote is perp. to A B; and if E c² be greater than 2 E B², the locus of the point P is ſtill the 45th ſpecies; if E c² $=$ 2 E B², the 41ſt ſpecies; and if it be leſs, the 39th. If E C $=$ E B, the aſymptote paſſes through E, and is the locus of the point P, and B is a conjugate point. Laſtly, if c fall in the point E, or A C $=$ C B, it becomes a conic equilateral hyperbola whoſe foci are A and B.

This queſtion was alſo anſwered by Meſſrs Amicus, Cock, Howard, and Plus Minus.

XV OR PRIZE QUESTION anſ. by Mr Geo Sanderſon, London.

LEMMA. If $-m$, $-n$, $-r$ be the three roots or values of x in the equation $ax^3 + bx^2 + cx + d = 0$; then 1ſt, if $r = m + n \pm 2\sqrt{mn}$,

then is $b^2 = 4ac$; 2d, if r lie without $m + n + 2\sqrt{mn}$ and $m + n - \sqrt{mn}$, that is greater than the former or less than the latter, then b^2 is greater than $4ac$; 3d, if r lie between $m + n + 2\sqrt{mn}$ and $m + n - 2\sqrt{mn}$, then b^2 is less than $4ac$. 4th, In the first case, where $r = m + n \pm 2\sqrt{mn}$, if $m = 4n$, the two least roots, n and r, are equal. 5th, If the two least roots be equal, and the third greater than 4 times the least, (or equal root), then b^2 is greater than $4ac$. Lastly, in either the first or second cases, namely when r does not fall between $m + n \pm \sqrt{mn}$, then half the sum of the roots is less than the greatest of the three. All the cases of this lemma will be evident to every one who considers, that in the equation $x^3 + px^2 + qx + r = 0$, p is equal to the sum of the roots, their signs being changed, q the sum of the products of every two, &c. &c.

SOLUTION. Fig. 21 to Sir I Newton's 15th species, consists of two ambigenous hyperbolas at d and ᵹ, and one inscribed at ᴅ, as in the annexed fig. but without oval or conjugate point. Here it appears that Sir Isaac considered the two least roots ($A\tau$, $A\daleth$) as $\left\{ \dfrac{4ad}{b^2 - 4ac} \right\} = AB =$ impossible when $\left\{ \dfrac{4ad}{b^2 - 4ac} \right\} \times$ (the corresponding abscissa to the ordinate ʙ c at the point c where the asymptote cuts the curve) is affirmative, or when b^2 is greater than $4ac$. But whoever considers the lemma, will find that examples are numerous in which the equation $ax^3 + bx^2 + cx + d = 0$ has three real and unequal negative roots, (or three real negative roots with the two least equal), and b^2 greater $\left\{ \dfrac{4ad}{b^2 - 4ac} \right\}$ a positive quantity, also A ᴅ less than the than $4ac$, or greatest of the three roots; and consequently the curve or locus of $\left\{ \sqrt{\dfrac{ax^3 + bx^2 + cx + d}{x}} \right\}$ consists of an inscribed the equation $y = \pm$ hyperbola at ᴅ, and two ambigenous ones at d, ᵹ, with an oval in the triangle ᴅdᵹ, or the same with a conjugate point. Here the two greater roots cannot become equal, as in the 11th species. Whence it is manifest that these two species shou'd follow Newton's 14th, so as to make the 15th and 16th, and not the 11th and 15th as Mr Stirling has placed them at pages 99 and 100.

By the first case of the lemma examples may be found in which the eq. $ax^3 + bx^2 + cx + d = 0$ has three real unequal roots (or three real roots with the two least ones equal), and $b^2 = 4ac$, and A ᴅ less than the greatest root A t. Consequently $AB = x = \left\{ \dfrac{nad}{b^2 - 4ac} \right\}$ will be infinite; or the asymptote cut the curve at an infinite distance; and the figure consists of three inscribed hyperbolas with three diameters, and an oval in the triangle ᴅdᵹ, or the same with a conjugate point. If the two least roots be impossible, the curve becomes Newton's 22d species; and therefore these two should make the 24th and 25th species, as Stirling has placed them at page 102.

As to Mr Stone's discoveries; I find that Sir I Newton's 59th figure to his 55th species is the locus of the equation $xy^2 = bx^2 - cx + d$; where the two roots or values of x, when $y = 0$, or $bx^2 - cx + d = 0$, are both positive. But as no notice is there taken of the locus of the equation $xy^2 = bx^2 + cx + d$, let us describe it here; taking for an example the numeral equation $xy^2 = 4x^2 + 56x + 160$, or $y =$

$$\pm \sqrt{\frac{4x^2 + 56x + 160}{x}}, \quad \begin{cases} \text{where the two roots or values of } x \text{ when} \\ y = 0, \text{ or } 4x^2 + 56x + 160 = 0, \text{ are } -4 \end{cases}$$

and -10.

Draw two indefinite right lines A B and A s cutting each other at right angles in A, (fig. 2). Let A be the beginning of the abscissa A B, and A s the first ordinate; then if A B be represented by $+ x$, and B C its corresponding ordinate by y; on A B, but on the contrary side of A, take A $\tau = -4$, and A $i = -10$. If $x = 0$, then $\pm$ B C is infinite, and the curve runs on infinitely towards s; therefore A s is an asymptote to two hyperbolic legs equally distant from A B. If $+ x$ be infinite, then $\begin{cases} \end{cases}$ $\sqrt{\frac{4x^2 + 56x + 160}{x}}$ $\begin{cases} \end{cases}$ becomes $y = 2\sqrt{x}$, or $y^2 = 4x$, an equation to the conic parabola, whose vertex is A, and parameter 4: whence the curve has two parabolic legs joined to two hyperbolic ones, meeting the parabola at an infinite distance towards B. If $- x$ be taken $= -5$, then $y = \pm 2$: if $- x$ be taken $= -4$ or -10, then $y = 0$, and the curve passes through the points τ and i: if $- x$ be taken less than -4, or greater than -10, $\begin{cases} \end{cases}$ $\sqrt{\frac{4x^2 - 56x + 160}{-x}}$ $\begin{cases} \end{cases}$ it is impossible, because the quantity under the vinculum is negative, and no part of the curve can fall between A s and τ, or beyond i; therefore the part of the locus lying on that side of A s is an oval, and the curve consists of two hyperbolo-parabolic figures on one side of the asymptote A s, with an oval on the contrary side.

If the two roots be equal, the oval becomes a conjugate point; which is Stone's second species. If the two roots be impossible, the curve becomes Newton's 57th figure to his 53d species; and therefore Mr Stone's two should be the 57th and 58th species in the enumeration, the catalogue being deficient without them; that is, they should be the 53d and 54th in Newton's, and the 57th and 58th species in Stirling's enumeration.

The same answered by Amicus.

As, in fig. 2d of Sir Isaac Newton's 1st species, where A D $= -\frac{b}{2a}$ $\begin{cases} \end{cases}$ is greater than the greatest root of the equation for the limits, when the conic hyperb. that bisects the ordinates of the curve, coincides with its asymptotes, and the term ey of conseq. is wanting, τ coincides with ϖ, i with π, and t with p, and that fig. 2d becomes the same with fig. 17th, or the 10th species, and when the oval vanishes, or the two less limits are equal, it becomes fig. 20 and species 13th: *So*, in
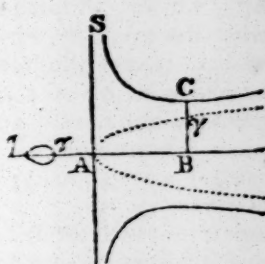
fig. 1ft of the 1ft fpecies, where A D is lefs than the greateft root A p, when the conic hyperbola coincides with its afymptotes, it is evident without farther illuftration, that the hyperbola whofe vertex is t muft be wholly within the afymptotes D δ, D d, whilft the other two cut them (as in fig. 21ft) and the oval ftill remains within the triangle D d δ (as in the 10th fpecies) bifected by the diameter A D; and this is Mr Stirling's 11th fpecies: and when, the two lefs limits being equal, the oval vanifhes into a conjugate point, it is his 15th, and the fame in appearance with Sir Ifaac's fig. 21ft, 15th fpecies. And when, in the limiting equation $ax^3 + bx^2 + cx + d = 0$, $4ac = b^2$, or the curve has three diameters, it is manifeft that the only difference this can make, will be, that the hyperbolas c and τ will be wholly within the angles at d and δ, as t is within p; the oval muft remain fo long as the two lefs roots of this equation are real and unequal, which is Mr Stirling's 24th fpecies, when they are equal the oval becomes a conjugate point, and this is his 25th fpecies, and the appearance as in Sir Ifaac's fig. 28th, fpecies 22d.

As to the curves expreffed by the equation $xy^2 = bx^2 + cx + d$,

when it takes the form $xy^2 = c \times x^2 + \overline{b + d} \cdot x + bd$; the firft difcovery of them is not due to Mr Stone, for there is not one word about them in the firft edition of his Dictionary, but to Mr. Nic. Bernoulli, who died in 1726, the year in which that edition was publifhed. They confift of two hyperbolo-parabolic curves like thofe in Sir Ifaac's 57th fig. with an oval on the contrary fide of the afymptote, if b and d be unequal; but with a conjugate point only, if they be equal. For, in the equation $xy^2 = c \times \overline{x + b} \times \overline{x + d}$, y is evidently equal 0, both when $x = -b$, and when $x = -d$.

This queftion was alfo ingenioufly anfwered by Plus Minus.

NEW QUESTIONS.

I QUESTION 878, *by Mr Geo Befwick, Coalfhaw Green.*

A Beautiful couple have lately been ty'd,
The groom was right lufty, and lovely the bride;
A fimple equation will eafily fhew
The age of this couple, as noted below.

$2x^3 - x^4 - x^2 + 2x^2y - y^2 = \sqrt{x^5y} - \sqrt{x^3y} = 2xy$, where $x + y$ and y denote their ages in years.

II QUESTION 879, *by Mr Tho Nield, Writing Mafter, Hawarden.*

Meafuring a fmall inclofure of a rectangular form, I obferved that if 2 poles were added to the breadth and 5 to the length, the area would be increafed by 430; but if 5 were added to the breadth and two to the length, it would be increafed by 445. It is required from hence to find the length and breadth of the inclofure.

III QUESTION 880, *by Mr Jonath. Hornby, Wefterdale School.*

Obferved in the fpring quarter, in latitude 22 deg. north, when the fun was due eaft, the difference between his altitude and hour from 6, in degrees, a maximum. Query the time of obfervation.

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IV Question 881, by Mr Timothy Simpſon, Papplewick.

A certtain gameſter is willing to take the odds to a guinea, that he, with 9 half-pence, brings up 3 heads preciſely, 4 times in 5 throws: what ought the odds to be?

V Question 882, by Mr Matthew Terry, Land-Surveyor.

What muſt be the length of a pendulum vibrating ſeconds at the the diſtance of 4 radii from the earth's center?

VI Question 883, by Mr Tho Truſwell, of Nuneaton.

If a given cone, whoſe altitude is 12, and baſe 8, be cut by two planes, the one of which is parallel to the ſide, and the other to the baſe; required the point in the ſide where the two planes meet, when the area of their ſections are equal to each other.

VII Question 884, by Mr John Dalton, of Kendal.

In the ſemicircle A C B, whoſe diameter is A B, and O C perpendicular to it from the centre, from B there is drawn a chord B F to cut O C in E, and on the ſame chord there is taken B D equal to the radius of the ſemicircle; it is required to determine the rectangle D E. E F, a maximum.

VIII Question 885, by Amicus.

A block of marble, in the form of the fruſtnm of a hexagonal pyramid, the ſide of the leſs end being 6, and of the greater 9 inches, has ſix points on the external ſur-face, one foot from the leſs end, upon any one of which it will reſt in equilibrio, on the point of a needle fixed perpendicular to the horizon. The length of the block is re-quired.

IX Question 886, by Mr Thomas Todd, of Darlington, late of Weſt Smithfield, London.

If the debts a, b, c, d, &c. in pounds, payable at the end of n, n', n'', n''', &c. t years, &c. Then I ſay the equated time from the firſt term, by compound in-tereſt, will be equal to the difference of the logarithm, of the ſum of the debts, and lo-garithm of the ſum of the preſent worths divided by the logarithm of one pound and its intereſt for one year; whether it be computed by the old method, by Kerſey's, or by Malcolm's; all giving the ſame anſwer. Query the inveſtigation by each method.

X Question 887, by Mr John Farey, London.

Let G B be a defective hyperbola of Sir Iſaac Newton's 44th ſpecies, A its conjugate point, B the vertex, and C H its aſymptote; draw B I a tangent to the vertex parallel to the aſymptote, on A B deſcribe a ſemicircle, and draw any line A F, cutting the circle in D, the curve in E, and the tangent B I in F. Then I ſay A C : C B : : D E : E F. Required a demonſtration.

XI Question 888, by Mr John Cullyer, Aſſiſtant at Mr M'Kain's School, Bungay, Suffolk.

Being in a thunder ſtorm, and having a cylindrical walking ſtick, 5 feet long; I held one end of it in my hand, and cauſed it to turn round in a conical motion, in which the other end deſcribed circles, parallel to the horizon, 6 feet in diameter; and the ſtick made 7 revolutions from the inſtant of my ſeeing the lightning till I heard the thunder. From which I deſire to know the diſtance of the thunder-cloud from me.

XII Question 889, by the Rev Mr John Hellins.

If there be four numbers A, B, C, D, in arithmetical progreſſion, whoſe common difference is 1, that is, $A - 1 = B$, $B - 1 = C$, and $C - 1 = D$; and if there be put $C = a$, $\left\{ \dfrac{a+2}{2a+1} \right\} = p$, and the modulus of Briggs s logarithms $= M$; and if a be not leſs than 100, then ſhall $\left\{ \dfrac{M}{pa^3 - \frac{1}{2}} \right\}$ expreſs the third difference of the logarithms of thoſe numbers, true to 18 places of figures. Query the demonſtration.

XIII Question 890, *by Lieut. Wm Mudge, of the Royal Artillery.*

If a string with the weights W, w, one at each end, be hung on a pulley, and the greater weight W touch the pulley, so that the less may have the whole length of the thread to vibrate by; and if, at the instant when it has completed one vibration, and is about to describe another, the weight W be suffered to descend; query the time of vibration, and the nature of the curve.

XIV Question 891, *by Major Edw Williams, of the Royal Artillery.*

It is required to assign the time of exhausting the ditches of a fortress of water, to within one inch of the bottom, by means of a rectangular cut or notch in the side from top to bottom, of 2 feet wide; the depth of the ditch or water being 9 feet, the breadth at top 30 feet, at bottom 32 feet, and the whole length of the ditches one mile.

XV Or Prize Question 892, *by Mr Geo Sanderson, London:*

(Whoever answers it before Candlemas Day has a chance for 10, and another for 8 Diaries.)

In considering the prize question for last year, I find that fig. 20 of Newton's catalogue consists of two inscribed hyperbolas at d and δ, and one containing its asymptotes within its own space at D; and that fig. 21 consists of two ambigenous hyperbolas at d and δ, and one inscribed at D, without oval or conjugate point. But between these two there are five more curves, essentially different from either; two of which have been described by Mr Stirling at pages 99 and 100. It is therefore required to determine the other three, with an example of a numeral equation for each.

Query *by Terricola.*

At what distance from the sun will a given burning glass make no alteration in the density of the solar rays?

*** The prizes for the several solutions have been determined by lot as follows: First, for the Prize Question, to Amicus 10, and Mr Geo Sanderson 8 Diaries.---2d, for the Prize Enigma, to Mr J Townsend and Mr John Culiyer each 8 Diaries and Supplements.---3d, for the general Answers to the Enigmas, to Miss Betty Smales and Mr Henry Lee each 8 Diaries and Supplements.---4th, for the Rebuses, &c, to Mr M Fleck and Mr John Ruther each 6 Diaries and Supplements. All of whom will please to send for them to Mr R Horsfield, Stationers Hall.

But all letters containing any matter for the use of the Diary, must be directed thus, "The Author of The Ladies Diary, Stationers Hall, London." And they must be franked or post paid, or they will not be received. Several were rejected this year by the postage not being paid.

‡ Erratum in the last Diary. In the fig. page 38, the oblique circle passing through A and R, should also pass through the point G.

Several Letters came too late to hand; viz. those of Mess. Ball, Walton, Wilding, and some others.

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